

# The People of Peel

## Human Capital Insights Report

Peel Development Commission  
& Peel Capability Collaborative

October 2021



## CONTENTS

INTRODUCTION .....	2
KNOW HOW CAPACITY .....	13
KNOWHOW ENABLERS .....	24
KNOWHOW APPLICATION.....	32
SWOT ANALYSIS AND KEY KNOWHOW INSIGHTS .....	45
SCENARIOS.....	48
GLOSSARY OF TERMS .....	61
TECHNICAL APPENDIX.....	62

### Version Control

Version	Date	Author	Approved
1	20 August 2021	Linnea Edebert Nikki Harvey	Jason McFarlane
2	25 October	Linnea Edebert Nikki Harvey	Jason McFarlane

This report has been prepared by FAR Lane for the Peel Development Commission and the Peel Capability Collaborative.

FAR Lane, Peel Development Commission and the Peel Capability Collaborative wish to acknowledge the Traditional Owners of the land on which the people of the Peel region live, work and study. We pay our respects to their Elders past, present and emerging.

## INTRODUCTION

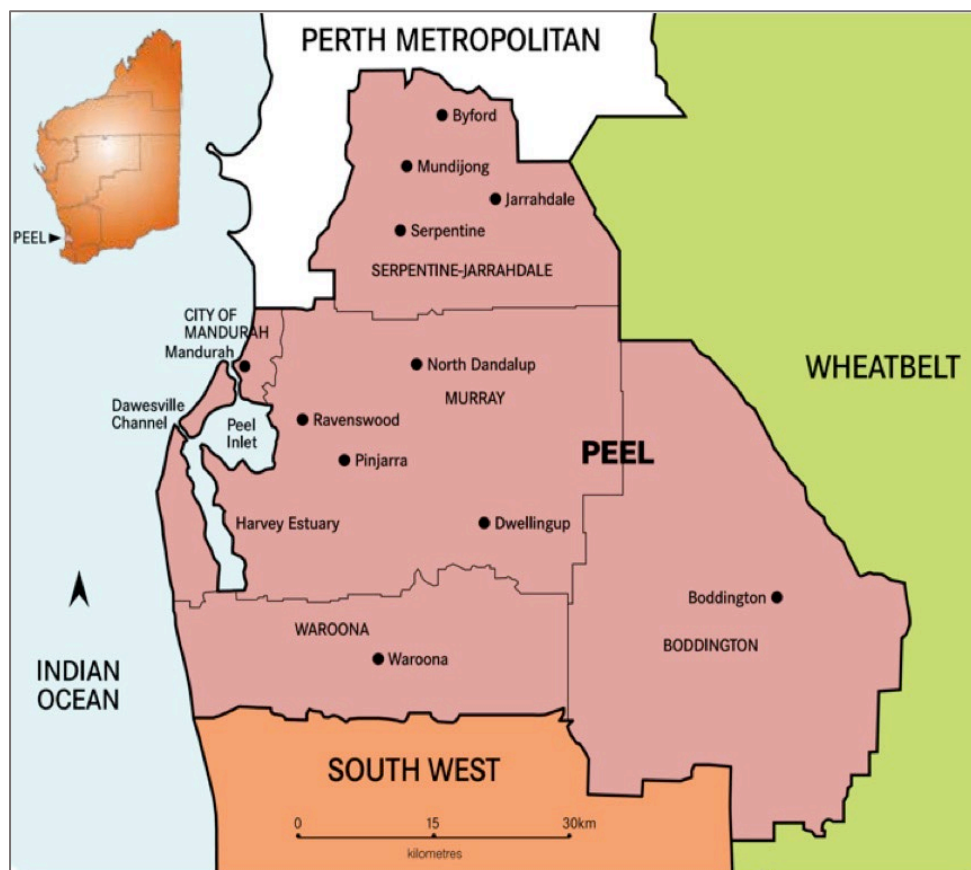
### Project context

The Peel region is located 75km from Perth CBD. It has a diverse landscape with coastline and urban, agricultural, and horticultural land. Peel consists of the Local Government Areas (LGA) of Boddington, Mandurah, Murray, Serpentine-Jarrahdale and Waroona and is home to approximately 146,200 people.

In recent years, the region has experienced rapid population growth, which has been driven by lifestyle-based migration, rather than the supply of local employment. As a result, approximately 29% of those living in the region work in the Perth metropolitan area<sup>1</sup>. By 2050, the region is expected to become one of the most populated areas outside of Perth. This growth has the potential to create vibrancy and prosperity, but will not come without challenges, especially relating to ensuring residents are serviced appropriately.

The region's economy is currently reliant on mining, manufacturing, construction, and agriculture sectors, as well as an increasing tourism sector. The largest employers within the region are Retail Trade, Health Care and Social Assistance and Construction.<sup>2</sup>

Map 1 - The Peel region



Source: Peel Development Commission Website 2021.

### Scope of Works

This project seeks to support a deeper understanding of the Peel region's human capital. It will provide the Peel Capability Collaborative (PCC) and Peel Development Commission

<sup>1</sup> Peel Development Commission, Transform Peel Workforce Skills Analysis Report

<sup>2</sup> REMPLAN 2021.

(PDC) with important insights related to regional economic and social development trends, disruptions and aspirations. Using these insights, a Roadmap will be developed with key stakeholders that map out priority human capital development initiatives that will position the Peel region to meet its economic development aspirations.

## Purpose and Structure of the Report

The Human Capital Insights Report is the first deliverable of the project. It seeks to provide PCC and PDC with key insights into the status of human capital in the Peel region by Local Government Area (LGA), likely future workforce requirements of growth sectors, and likely gaps (based on population projections and current industry growth/socioeconomic strategies).

The report will be organised by three key areas of inquiry (which will be explained in more detail later in this section):

1. **Knowhow capacity**
2. **Knowhow enablers**
3. **Knowhow application**

Each chapter profiles an element of the Peel region's human capital outlines findings based upon analysis of profiles against the region's economic development aspirations, regional characteristics, and performance with comparative regional economies around Australia. Based on the results of this analysis, three scenarios have been utilised to explore the potential future requirements of human capital development, based on the Peel region's economic opportunities and challenges. Scenarios are helpful for exploring potential advantages and trade-offs associated with taking a range of approaches to preparing for the region's future industry and workforce needs. The scenarios explored in this analysis are:

- Scenario one: **"Business as usual"**. The Peel region's development continues in line with current trends. Scenario one is based on the current industry and population profile being maintained to 2031 and acts as a base case, which is useful to have as a baseline against which to compare the impacts of other scenarios.
- Scenario two: **"Population services driven economy"**. Scenario two describes a future where significant investment is made in providing the amenities and services needed to attract more working professionals to live in the region as well as address the complex needs of the Peel region's communities.
- Scenario three: **"Strategic industries"**. Scenario three is based on a significant increase and growth of the region's tourism, food, and agriculture industries, beyond the current regional aspirations.

## Key Research Questions

FAR Lane's proposed approach will support the PDC and PCC to answer the following key research questions:

1. What is the current status of human capital in the Peel region?
2. How does the current status of human capital in the Peel region compare with similar regions in Western Australia and Australia?
3. What are the likely future workforce requirements of growth sectors within and relating to the Peel region?
4. What are the likely workforce gaps based on population projections and current industry growth/socioeconomic strategies?
5. How does human capital influence socioeconomic success?
6. How do the factors of human capital and workforce requirements intersect to influence the future aspirations of the region?

## Role of Knowhow in Regional Economic Development

Human capital is defined as the combination of regional knowledge, skills, experience, context and motivations of regional entrepreneurs, workers, managers, and supporters. Harvard's Complexity Report for WA (2020) explained, *"Our most prosperous societies are wiser, not because their citizens are individually brilliant, but because these societies hold a diversity of knowhow and because they are able to combine it to create a larger variety of smarter and better products."*<sup>3</sup>

The development of human capital, also referred to as 'knowhow', within a region's network of firms, institutions, entrepreneurs and workers, is a basis by which regional socioeconomic development opportunities and challenges can be addressed.

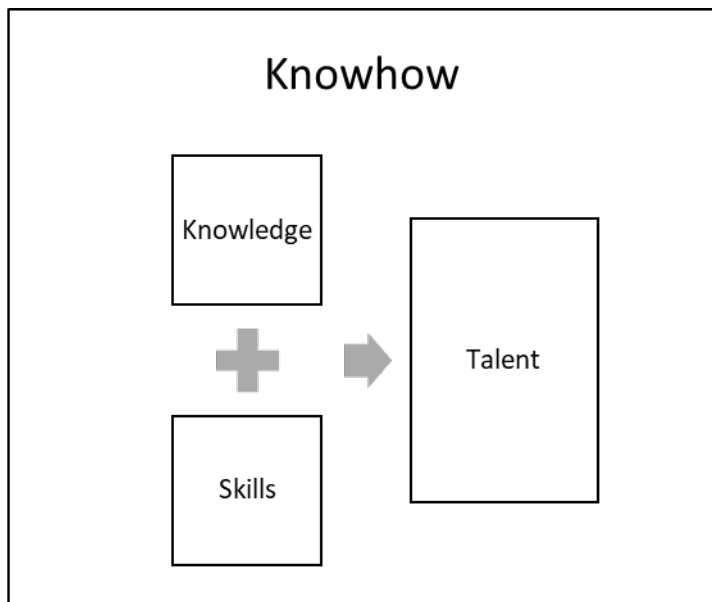
**For the purpose of this project, human capital will be referred to as 'knowhow' and is the combination of talent, skills and knowledge that exists within the Peel region's network of individuals, enterprises and industries.**

### Talent, Skills, and Knowledge

Measuring a region's knowhow is not a perfect science. By profiling and analysing the talent within a region, and the skills and knowledge that make up that talent, we can begin to build an understanding of regional knowhow.

There is a range of definitions and understandings of the relationship between talent, skills, and knowledge. For this project, standard definitions have been contextualised to build a practical framework within which we can measure and analyse knowhow. As described in figure 1 is the combination of the skills and knowledge of both individuals, but also enterprises and industries within a regional economy.

Figure 1– Talent skills and knowledge interrelationship



### Talent

McKinsey defines talent as "the sum of a person's abilities ... his or her intrinsic gifts, skills, knowledge, experience, intelligence, judgment, attitude, character and drive. It also includes his or her ability to learn". In the context of this project, we are applying the idea of 'talent' at both individual and group levels. We are interested in entrepreneurial and innovative talent that exists within an economy, industry or enterprise that can be harnessed to transform

<sup>3</sup> Harvard University 2020 *The Atlas of Economic Complexity*

ideas into unique, commercial, scalable, and tradable products and services. Talent requires skills and knowledge but combines this with the ability and inclination to take calculated risks.

### *Skills*

Skill can be defined as “*an ability to do an activity or job well, especially because you have practised it*”<sup>4</sup>. In the context of this project, the concept of skill is applied at the individual, enterprise, and industry levels. Skills are developed through people, enterprises and industries that have grown and evolved over time, generating new ideas and enhancing processes, and practices to increase their productivity and competitive advantage.

### *Knowledge*

Knowledge can be defined as “*understanding of or information about a subject that you get by experience or study, either known by one person or by people generally*”<sup>5</sup>. In the context of this project, the individual and collective knowledge that exists within an economy, industry or enterprise can be developed through access to training and development (i.e., university, TAFE and other professional development institutions or programs).

### **Knowhow Indicators**

We can begin to understand and analyse knowhow (talent, knowledge, and skills) within a regional economy by examination of the following indicators:

1. **Knowhow Capacity** - The socioeconomic characteristics of the talent knowledge and skills within an economy. For example, workforce size (number of people of working age) and educational attainment rates.
2. **Knowhow Enablers** – The systems, services and infrastructure that sit around these human capital pools that enable the development of necessary knowledge, skills, and talent to participate and enhance the regional economy. For example, education and training providers, innovation support and service infrastructure.
3. **Knowhow Application** – How talent, knowledge and skills are being applied within an economy. For example, job type, local employment, employment self-sufficiency and containment, local start-ups, and SMEs.

These three indicators provide a useful framework through which we can analyse the Peel region’s human capital and will form the three main profile chapters of this report.

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<sup>4</sup> Cambridge Dictionary 2021

<sup>5</sup> Cambridge Dictionary 2021

## Theory of change – Regional knowhow

Knowhow (human capital) is increasingly being recognised for the role it plays in the prosperity and productivity of economies, alongside more established economic development mechanisms. Knowhow actively contributes (or has the potential to) to the competitiveness, resilience, sustainability and equity of regional economies, the impact of which is enhanced growth and prosperity in regional economies.

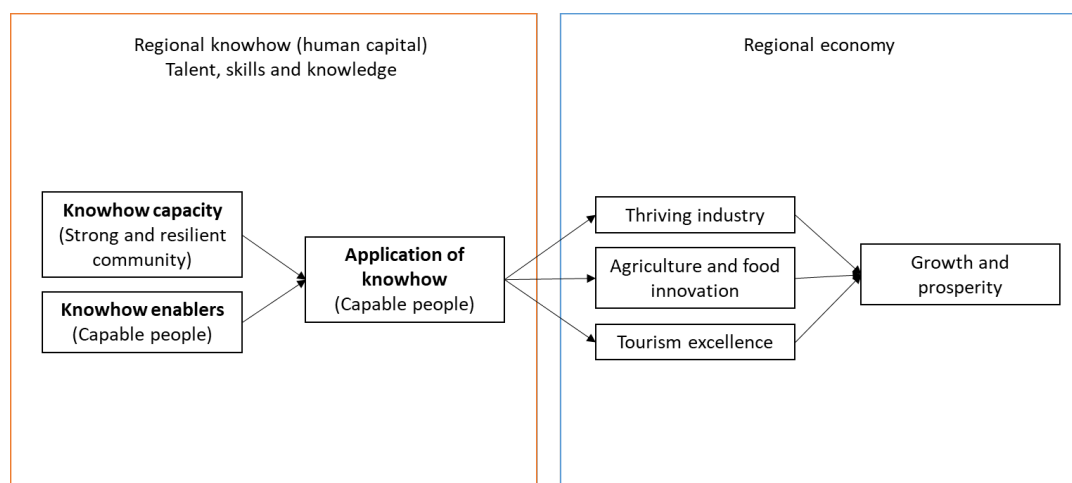
Economic development aspirations vary across Local Government Areas, regions and states. A key source of information about the aspirations of the Peel region is Peel Regional Blueprint (The Blueprint), which is being actively tracked and monitored by the PDC. The Blueprint puts forward five headline aspirations for the region by 2050:

1. **Thriving Industry:** Peel's industries and businesses are diverse and globally competitive and part of an economy that has raised incomes and living standards for all.
2. **Agriculture and Food Innovation:** Peel's agriculture and food production sectors will be enhanced through continued innovation, investment, and research.
3. **Tourism Excellence** - Peel's tourism industry and related businesses will be diverse, competitive, and sustainable creating economic growth and jobs through high-value products and services.
4. **Capable People:** Peel's workforce will be highly skilled and adaptable to structural and technological change to support an economy that is strong, diverse, and high performing.
5. **Strong and Resilient Community:** Peel's communities will be strong, vibrant, and resilient underpinned by best practice social services and infrastructure.

### Regional Aspirations and the Drivers of Regional Economic Growth and Prosperity

The theory of change that this report utilises posits that knowhow actively contributes (or has the potential to) to the aspirations outlined in the Peel Regional Blueprint. By combining the Blueprint's aspirations and our indicators of knowhow we develop a regionally unique theory of change that can be used as a framework to analyse knowhow requirements. This theory of change is described in Figure 2.

Figure 2 – Knowhow theory of change and Peel Regional Blueprint



As outlined in Figure 2, the Blueprint's aspirations of "capable people" and "strong and resilient communities" align directly with the knowhow indicators. The presence and development of capable people and strong and resilient communities will contribute to the aspirations of a thriving industry and will be important factors in the development of key industries of tourism, food, and agriculture. The elements of knowhow are strongly interrelated and can be applied

in more than one area. Where possible, this report seeks to organise around the theory of change described in Figure 2.

Table 1 below describes the indicators that the Peel Regional Blueprint has identified as a measure of success by 2050. Indicators that are especially relevant to the understanding of knowhow development in the Peel region will be assessed in each chapter to identify the critical gaps that need to be addressed to meet the requirements of the region's future economy.

*Table 1– Knowhow indicators based on regional aspirations*

Goal	Indicator / Goals	Related Knowhow indicator
<b>Thriving industry</b>	By 2050, employment self-sufficiency targets will exceed the WA state average	Knowhow application
	By 2050, Mandurah's population will have increased to 130,000.	Knowhow capacity
	By 2050, the Shire of Murray's population will have increased to 58,000.	Knowhow capacity
	By 2050, Serpentine- Jarrahdale's population will have increased to 107,000.	Knowhow capacity
	By 2050, the Shire of Waroona's population will continue to grow (depending on increasing urban development).	Knowhow capacity
	By 2050, the Shire of Boddington's population will have increased to approximately 7000*.	Knowhow capacity
<b>Agriculture and Food Innovation</b>	By 2050, sustainable practices are embedded within all economic and regional development activities in the Peel.	Knowhow application
	By 2050, the Peel's agriculture and food contribution to the state's gross regional product is increased to 5%.	Knowhow application
	By 2050, the Peel's contribution to the state agricultural and food value is increased to 7%.	Knowhow application
	By 2050, the Peel's contribution to the state's annual agricultural export will be increased to 10%.	Knowhow application
<b>Tourism Excellence</b>	By 2050, the Peel tourism economy is tripled.	Knowhow application
	By 2050, domestic visitor length of stay had doubled.	Knowhow application
	By 2050, the number of significant events in the region has grown to 12 per year.	Knowhow application
<b>Capable people</b>	By 2050, Peel residents have the skills and abilities to fill the 78,352 new jobs that will result from the establishment of broadened and diversified business and commercial sectors.	Knowhow enablers
	By 2050, the Peel's workforce participation rates exceed the WA state average.	Knowhow application
	By 2050, the educational attainment of Peel residents is above the WA state average.	Knowhow enablers
	Peel residents who seek to participate in training and workforce development programs that meet the needs of the individual and industries are accommodated within the region.	Knowhow enablers
	Peel young people who seek to participate in industry priority pathways programs will fulfil their career aspirations within the region.	Knowhow enablers

Goal	Indicator / Goals	Related Knowhow indicator
	By 2050, Index of Community Socio-Educational Advantage (ICSEA) for our public schools is commensurate with independent school ICSEA.	Knowhow enablers
<b>Strong and resilient communities</b>	By 2050, Peel employment participation rates exceed WA state average.	Knowhow application
	By 2050, Index of Relative Socioeconomic Disadvantage (IRSD) is at a lower level of disadvantage to the National average.	Knowhow enablers
	By 2050, participation of older active community members in the workforce is above the WA state average.	Knowhow application

Strategic economic development projects within the region are also relevant to the development of knowhow, as they will require specific skills, talent, and knowledge to maximise their potential as drivers of economic activity.

Table 2 - *Knowhow indicators based on regional projects*

Project/initiative	Indicator / Goals	Knowhow Indicator
<b>Transform Peel</b>	<ul style="list-style-type: none"> <li>33,00 new jobs by 2050.</li> <li>\$16.2 billion per year in economic output.</li> </ul>	Knowhow application
	Multi-skilled workforce (Key Shape not T Shape people).	Knowhow enablers
	Increased STEM and ICT skills and expertise.	Knowhow enablers
	Workforce resilience and positive attitudes (work ethic, integrity, initiative, critical thinking).	Knowhow enablers
	Workforce core competencies (IT, Project Management, Communication, Problem Solving, Cultural Awareness, Teamwork).	Knowhow enablers
	Provision of start-up and incubator support to encourage new agri-business opportunities in the region.	Knowhow enablers
	Skills matched to Jobs.	Knowhow enablers
	Enhanced infrastructure to deliver agri-food industry-relevant training. Potential for joint venture TAFE, Industry and Government to develop on-site multi-functional centre within Peel Business Park.	Knowhow enablers
<b>Peel Business Park</b>	<ul style="list-style-type: none"> <li>300 construction jobs.</li> <li>160 jobs once stage 1 is fully operational (first stage of lots).</li> </ul>	Knowhow application
<b>WA Agri-food Precinct</b>	506 direct jobs within 5 years of operation. 977 indirect jobs within 5 years of operation.	Knowhow application
<b>Transform Mandurah</b>	<ul style="list-style-type: none"> <li>Attracting investment into the City.</li> <li>Addressing structural unemployment.</li> </ul>	All
<b>Peel Hospitality Training Centre</b>	Development of industry-standard hospitality and tourism facilities at the Mandurah education campus.	Knowhow enablers
	Training to meet projected 2,200 additional tourism jobs in the region by 2050.	Knowhow application
<b>Byford TAFE</b>	Development of a TAFE in Byford to enable access to equine businesses and provide an opportunity to explore the development of equine-related training alongside traditional TAFE courses.	Knowhow enablers

<b>NERA Hydrogen Cluster</b>	Explore potential to facilitate the Hydrogen industry in Peel. Hydrogen could potentially be used in the areas of heavy transport, 'green' steel and aluminium manufacturing, and off-grid renewable energy supply, which would, in turn, create new industry jobs and reduce greenhouse emissions.	Knowhow application
<b>Dwellingup Futures</b>	Development of the trails network in Dwellingup to become an international trails town contributing to additional employment opportunities and output in the region.	Knowhow application

Common human capital themes which arise from the region's industry development projects include:

- Increased need for a multi-skilled workforce with enhanced core capabilities and competencies;
- Increased need for skills development relating to tourism and hospitality industries;
- Increased need for skills development relating to STEM, ICT, food, and agriculture industries; and
- Provisions of start-up and incubator support.

## Benchmarks

Benchmarks help us understand how an economy is performing or is characterised in relation to similar economies. We can identify areas where there is a divergence from averages, indicating a significant gap to be addressed, or areas of alignment, indicating relative stability. Based on the characteristics of the Peel region, five benchmarks have been identified (Table 3). The Sunshine Coast, Mornington Peninsula, Greater Geelong and Wanneroo are all located in proximity to a major City. On the other hand, the South-West region is similar to the Peel region based on location characteristics and natural resources. Other notable similarities between the benchmarks are that they all generally have low educational attainment rates, and lower employment self-sufficiency rates. The indicators in Table 3 below will be used throughout the report to contextualise the Peel region's socioeconomic characteristics or performance.

Table 3 - Comparison of Benchmark Regional Economies

	Peel Region	Sunshine Coast	Mornington Peninsula	Greater Geelong	South-West Region	City of Wanneroo	Rockingham
<b>Distance from City</b>	75km	100km	40-80km	75km	275km	30km	47km
<b>Population</b>	146,200	336,500	168,900	264,900	182,000	212,800	125,100
<b>ESS</b>	75%	91%	-	83%	67%	58%	70.6%
<b>Workforce Participation Rate</b>	56%	58%	55%	58%	68%	67%	64%
<b>Unemployment rate</b>	7%	7%	7%	6%	3%	9%	10%
<b>SEIFA Index (IRSD)</b>	983	1067	1030	994	993	1015	1,001
<b>Local Industries of employment</b>	Retail Trade, Health Care & Social Assistance, Construction	Health Care & Social Assistance, Construction, Retail Trade.	Construction, Health Care and Social Assistance, Retail Trade.	Health Care & Social Assistance, Retail Trade, Construction	Health Care & Social Assistance, Retail Trade, Construction	Construction, Retail Trade, Education & Training	Retail Trade, Health Care & Social Assistance, Education & Training.

Source: ABS ERP 2016, Mornington Peninsula Shire 2019, REMPLAN 2020, Economic.id. 2021, Profile.id 2021.

Table 4 - Comparison of Indicators by LGA in the Peel region

Indicator	Boddington	Mandurah	Murray	Serpentine-Jarrahdale	Waroona
Distance from City	120km	72km	40-80km	75km	275km
Population	1,800	80,800	16,700	26,800	4,100
ESS	32%	73%	44%	54%	38%
Workforce Participation Rate	63%	53%	52%	68%	53%
Unemployment rate	6%	11%	10%	4%	6%
SEIFA Index (IRSD)	991	971	962	1,040	945
Local Industries of employment	Mining (69%), Construction, Other Services.	Retail Trade, Health Care & Social Assistance, Education & Training.	Manufacturing, Mining, Construction.	Construction, Education & Training, Agriculture Forestry & Fishing.	Manufacturing, Mining, Construction.

Source: ABS 2016, REMPLAN 2020, Economic.id. 2021, Profile.id 2021.

## Sunshine Coast

The region is located about 100km north of Brisbane with a population of 336,482. The participation rate of the labour force was 58% in 2016, with unemployment rates of 7%. The biggest industry of employment is Health Care and Social Assistance (15%), Construction (12%), and Retail Trade (11%). The most common occupations within the area were Professionals (19%), Technicians and Trades Workers (16%) and Clerical and Administration Workers (13%). The region had a lower proportion of people holding formal qualifications, and a higher proportion of people with no qualifications. The region has a SEIFA Index score of 1,067<sup>6</sup>.

## Strategy

The Sunshine Coast's Regional Economic Development Strategy states the challenges the region has experienced includes volatility in tourism demand, fluctuating levels of regional unemployment and average income levels. The response to these challenges includes securing a high level of investment to enable growth in employment opportunities, investment in communities and delivery of essential infrastructure and services to build on the talent and skills of its workforce and the contribution of community members. This included the establishment of priority investment areas associated with projects that offered future regional development opportunities by clarifying the supply chains of the projects to identify gaps and opportunities. Additionally, the establishment and development of research capability and reputation.<sup>7</sup>

## Mornington Peninsula

Mornington Peninsula Shire is located 40-80 kilometres south of the Melbourne CBD and has a population of 168,862. The participation rate of the labour force is 62% of which 7% were unemployed. The biggest industries of employment are Construction (13%), Health Care and Social Assistance (13%) and Retail trade (11%). The most common occupations are Professionals (19%), Technicians and Trades Workers (18%), and Managers (14%)<sup>8</sup>. The SEIFA (IRSD) Index score of the region was 1,030. The region had a lower proportion of people holding formal qualifications and a higher proportion of people with no qualifications<sup>9</sup>.

<sup>6</sup> ABS ERP 2020, Profile.id 2021.

<sup>7</sup> Sunshine Coast Regional Council, 2021. *Regional Economic Development Strategy 2013-2033*

<sup>8</sup> ABS ERP 2020, Profile.id 2021.

<sup>9</sup> ABS ERP 2020, Profile.id 2021.

### Strategy

Similar to the Peel region, Mornington Peninsula has a strong tourism industry and plans to focus on the food economy to take advantage of its rich history and connection to agriculture. Strategies for economic development within the Morning Peninsula is skills enhancement, information sharing for businesses, identifying opportunities for emerging industries and enhancing infrastructure for greater business opportunities.<sup>10</sup>

### Greater Geelong

The Greater Geelong region is located 75km from Melbourne CBD and had a population of 264,866 in 2020. The total labour force has a participation rate of 58% of which 6% were unemployed. The biggest industry of employment is Health Care and Social Assistance (15%), Retail Trade (12%), and Construction (10%). The most common occupations within the region are Professionals (21%), Technicians and Trades Workers (15%), and Community and Personal Service Workers (13%). The region had a lower proportion of people holding formal qualifications, and a higher proportion of people with no qualifications. The area has a SEIFA (IRSD) Index score of 994.<sup>11</sup>

### Strategy

Like the Peel region, Greater Geelong has a good tourism industry which the Council want to grow by upgrading visitor facilities, experiences, and accommodation. The region aims to work with the government to deliver successful projects to enhance and diversify employment and business opportunities. Additionally, to bring about more support to local businesses, markets, and products. The strategy involves an enhanced transport infrastructure by integrated rail, road, and sea connections.<sup>12</sup>

### South-West Region

The region is located in the South-West of Western Australia and has a population of 182,000. The participating rate of the labour force was 68% in 2016, with unemployment rates of 3%. The biggest industries of employment are Health Care and Social Assistance (5%), Retail Trade (5%), and Construction (5%). The most common occupations are Technicians and Trades Workers (8%), Professionals (6%), and Labourers (6%). The region had a lower proportion of people holding formal qualifications, and a higher proportion of people with no qualifications. The region has a SEIFA (IRSD) Index Score of 993.<sup>13</sup>

### Strategy

The South-West region is the most populous and fastest growing after Perth and Peel. Their vision is to generate a high standard of social amenity with sustainable water and energy supplies, diverse economic activities and high-quality food that is supported by effective infrastructure. Like Peel, the region has an abundance of land and natural resources which is crucial for the local economy as the biggest industries are related to mining and agriculture. The strategy recognises the need to promote the development of new and traditional industries through proactive land-use planning and further development of Bunbury Port and other strategic industrial areas.<sup>14</sup>

### City of Wanneroo

The City is located 30km North of Perth and has a population of 212,800. The participating rate of the labour force was 67% in 2016, with unemployment rates of 9%. The biggest industries of employment are Construction (16%), Retail Trade (13%), and Education and

<sup>10</sup> Mornington Peninsula Shire 2019, *Economic Development Strategy 2016-2019*.

<sup>11</sup> ABS ERP 2020, Profile.id 2021

<sup>12</sup> City of Greater Geelong 2021.

<sup>13</sup> ABS 2016, REMPLAN 2021.

<sup>14</sup> Western Australia Planning Commission 2015 *South-West Regional Planning and Infrastructure Framework*.

Training (12%). The most common occupations are Technicians and Trades Workers (19%), Professionals (16%), and Clerical and Administrative Workers (14%). The City had a higher proportion of residents with a vocational qualification, as well as a higher proportion with no qualification compared to Greater Perth. The City has a SEIFA (IRSD) Index Score of 1015.<sup>15</sup>

### Strategy

The City of Wanneroo is the fastest growing local government in Western Australia. Through their strategy, they aim to create support for local businesses to drive economic growth and diversify the economic base. The vision is to create a society that is healthy, safe, and connected by creating distinctive places and engaging with the community. The city's vision for the future economy prioritises the enhancement of local jobs, innovation, and visitation through investment in local business infrastructure and the development of strategic partnerships and alliances ensuring funding and project initiation.<sup>16</sup>

### City of Rockingham

The city is located 47km south-west of Perth CBD and has a population of 125,100. The participating rate of the labour force was 64%, with unemployment rates of 10%. The biggest industries of employment are Construction (12%), Health Care and Social Assistance (11%), and Retail Trade (10%). The most common occupations are Technicians and Trades Workers (21%), Professionals (13%) and Community and Personal Service Workers (13%). The city has a higher proportion of people with vocational qualifications and no qualifications compared to Greater Perth. The city has a SEIFA Index (IRSD) score of 1,001.<sup>17</sup>

### Strategy

The City of Rockingham's Strategy includes addressing the needs of the local business community and attracting new and diverse investment to enhance economic and social benefits to the community. Four key elements were developed to realise the City's vision, which included investment attraction, the development of a more vibrant town centre, local business development and taking a lead role in actively advocating and lobbying for regional infrastructure and services.<sup>18</sup>

<sup>15</sup> ABS 2016, REMPLAN 2021.

<sup>16</sup> City of Wanneroo 2017 *Strategic Community Plan 2017-2027*.

<sup>17</sup> ABS 2016, Profile.id 2021, economy.id 2021.

<sup>18</sup> City of Rockingham 2020 *Economic Development Strategy 2020-2025*

## KNOW HOW CAPACITY

Characteristics of the talent, skills and knowledge in the Peel region enable understanding of the current trends and gaps between skills needed and actual skills. To carry out the analysis, the following indicators have been considered:

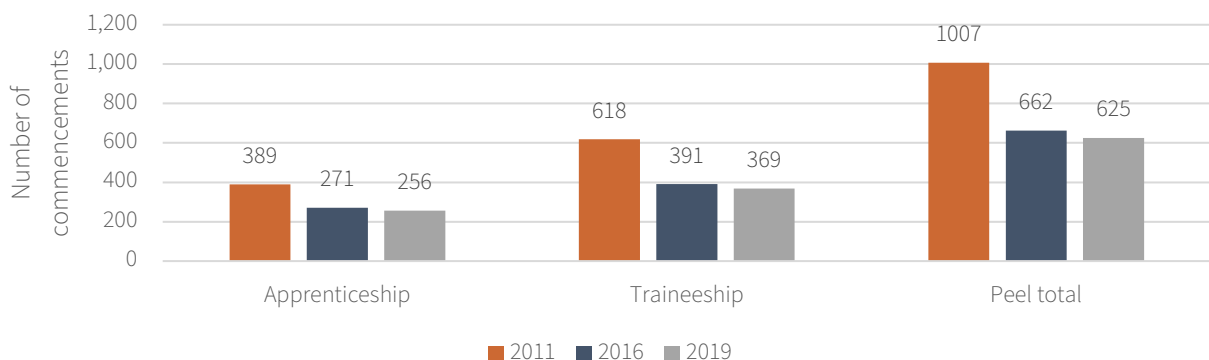
- Education and training qualities.
- Level of education.
- The population of working age.
- Unemployment rate.
- Socioeconomic indicators.
- Immigration characteristics.

### Education and Training

#### Traineeships and Apprenticeships

Analysis of traineeship and apprenticeship commencements enables understanding of how many, and what type of skills the population are demanding. Figure 3 illustrates the number of apprenticeships and traineeship commencements in 2011, 2016 and 2019. The Figure suggests that the number of commencements of apprenticeships substantially decreased from 2011 to 2016 and have continued to decrease since, however at a lower rate. Since 2012, there have been several reductions in the incentives paid to employers, which appear to have affected the number of commencements of apprenticeships and traineeships.<sup>19</sup> The trend is similarly apparent on a state average as the traineeship and apprenticeship commencements decreased from 19,600 in 2016 to 16,500 in 2019 (a 16% decrease)<sup>20</sup>.

Figure 3 - Commencement by contract type in the Peel region.



Source: Department of Training and Workforce Development 2019, FAR lane 2021.

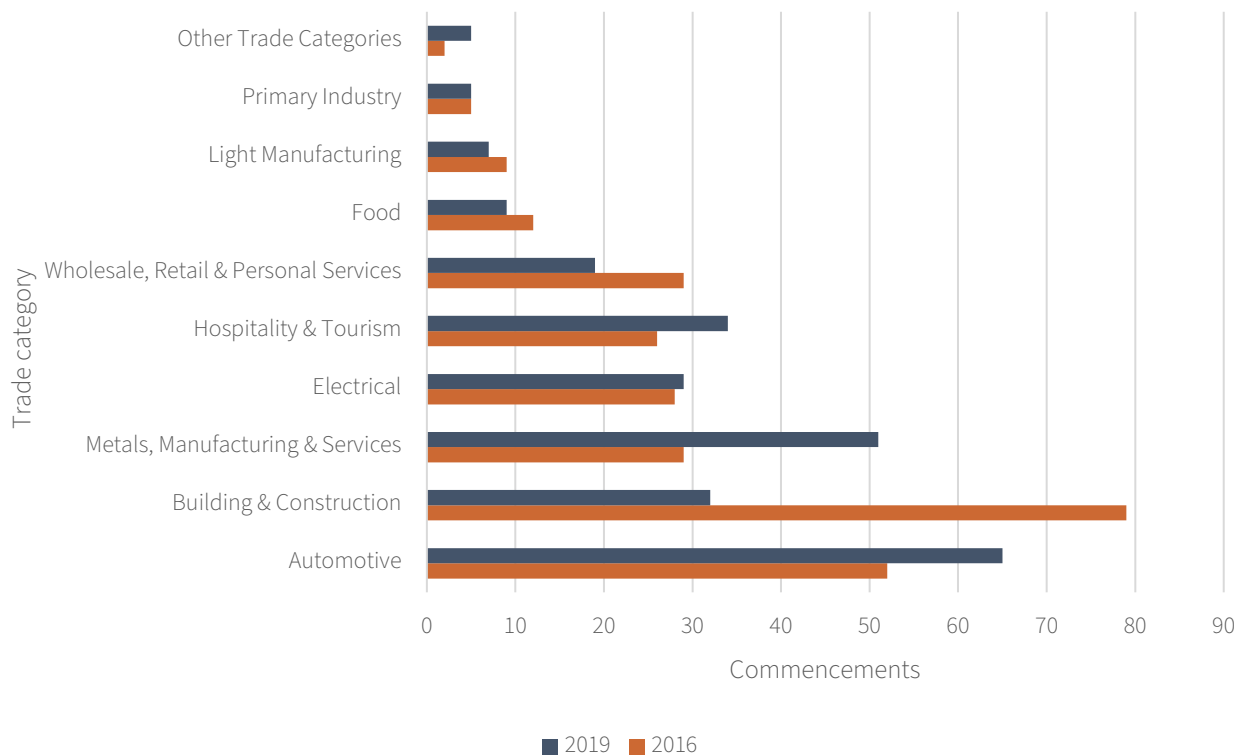
The apprenticeships commencement by category in the Peel region (Figure 4) suggests that the trade industries that are gaining interest are Metals, Manufacturing and Services, Automotive, and Hospitality and Tourism. The trade that has kept relatively constant is Electrical. The remaining trade industries have seen a decline in commencement. The commencements that are increasing are within industries that are important to the region.

The change in traineeship commencements between 2016 and 2019 within the Peel region (Figure 5) show that overall traineeship commencements have decreased from 391 to 369. The two trade categories that have increased commencements are Building and Construction and Community Services, and Health and Education.

<sup>19</sup> NCVET 2016.

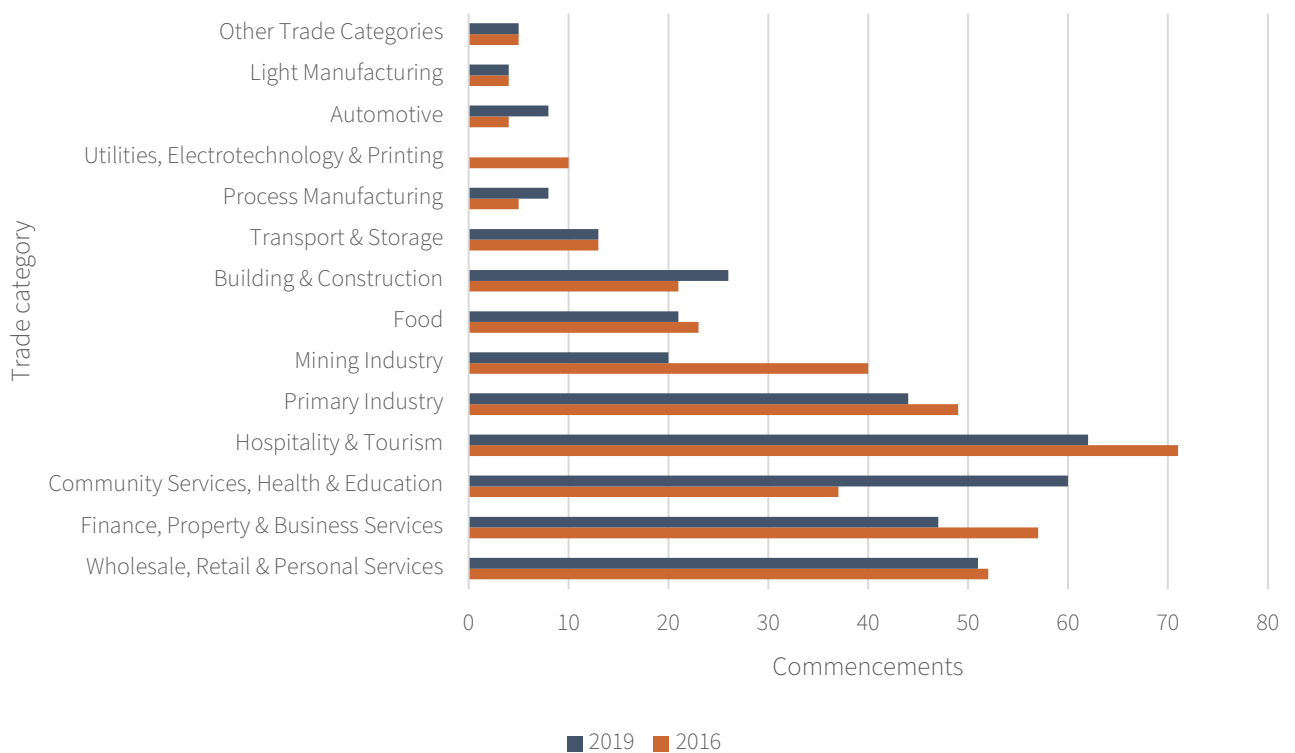
<sup>20</sup> NCVET 2020.

*Figure 4 – Apprenticeships commencements by category in the Peel region*



Source: Department of Training and Workforce Development 2019, FAR lane 2021.

*Figure 5 - Traineeships commencements*

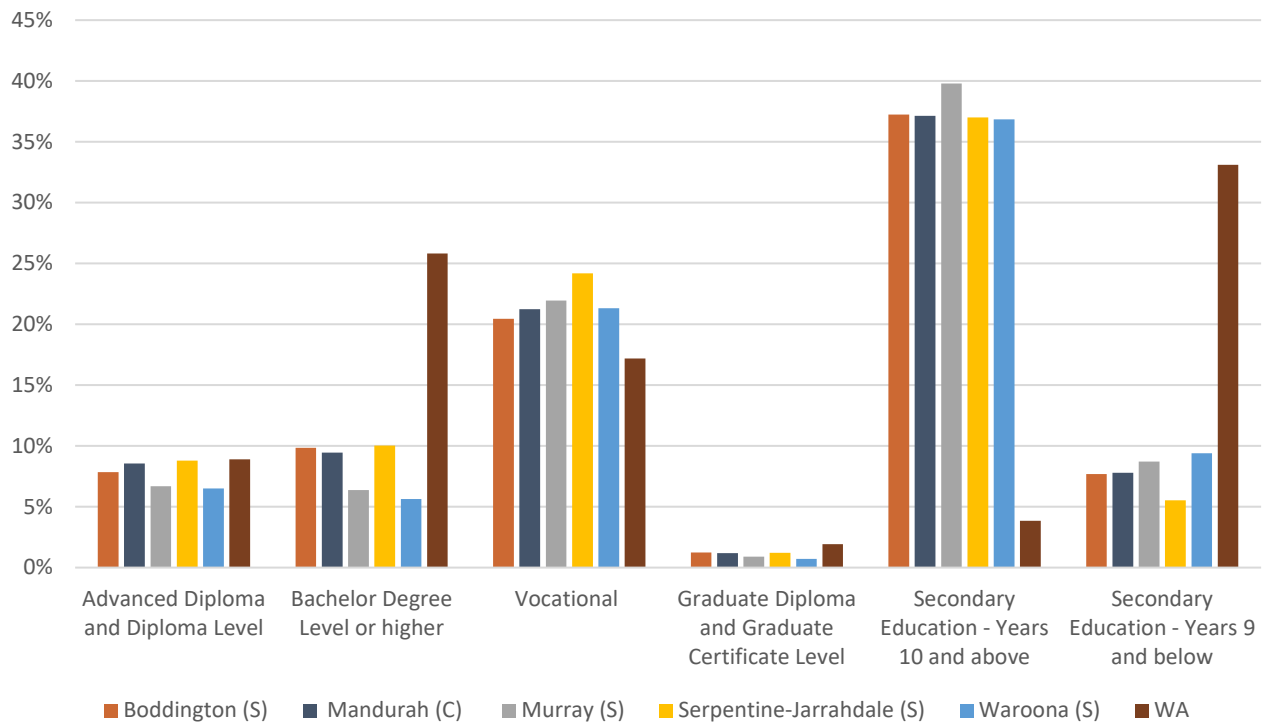


Source: Department of Training and Workforce Development 2019, FAR lane 2021.

## Level of Education

Education attainment data suggests that a large majority of people in the Peel region have attained secondary level schooling (year 10 and above). Overall, the Peel region has relatively low numbers of high tertiary attainment (9%) compared to Greater Perth, where 23% of people had a bachelor's degree or higher. Murray and Waroona have the lowest levels of high tertiary education in the region (Figure 6).

Figure 6 - Educational attainment by LGA, 2016

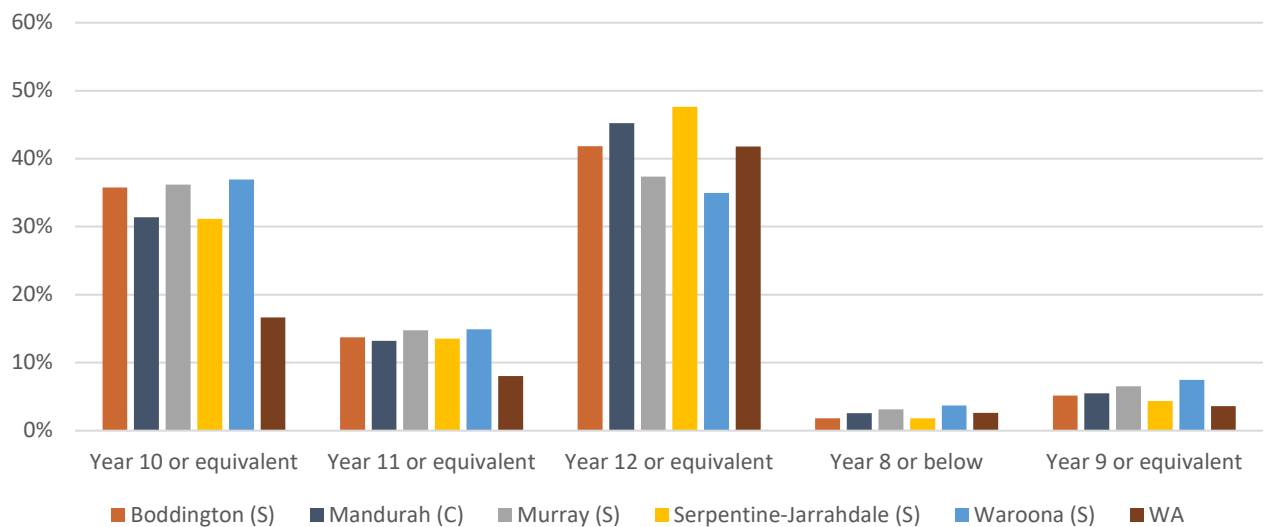


Source: ABS Census 2016, FAR Lane 2021.

## Education Completion

Of the workforce (people aged over 15) living in the Peel region, less than 50% completed Year 12 or equivalent in 2016 (Figure 7). This is lower than the Greater Perth proportion, where 55% of the workforce completed year 12 in 2016. Waroona and Murray had the lowest proportion (35% and 45% respectively) of residents that completed secondary education. In contrast, Serpentine-Jarrahdale had the highest proportion of residents that completed high school (48%), following Mandurah (45%) and Boddington (42%).

Figure 7 - Education completion by LGA, 2016

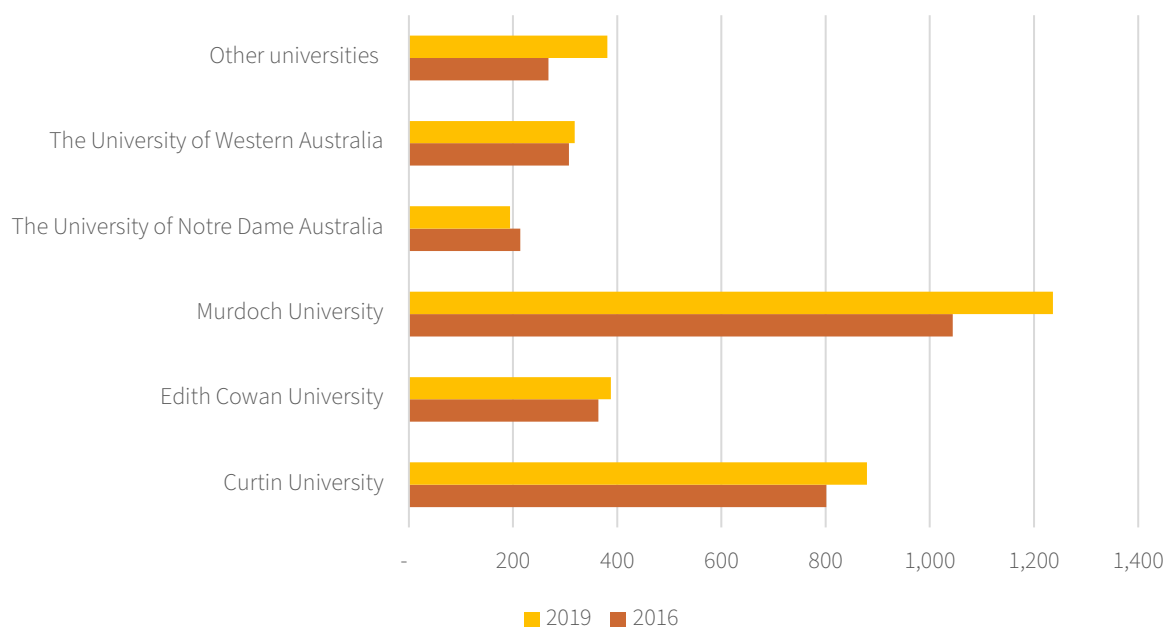


Source: ABS Census 2016, FAR lane 2021.

### University commencement by Peel residents

University commencements increased from 3,000 to 3,400 (13%) between 2016 and 2019. However, seeing that the region has experienced population growth the commencement increase is not significant. Murdoch University has the highest proportion of Peel resident commencements (Figure 8), likely resulting from its proximity and access to road and rail infrastructure.

Figure 8 - University commencements by Peel residents at Australian Institutions



Source: PDC 2021, Far lane 2021.

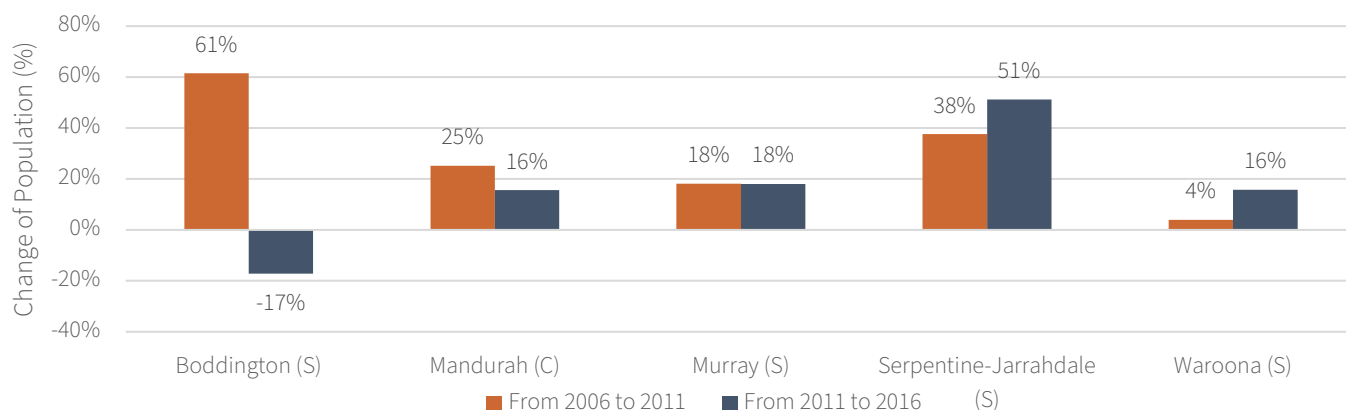
### Working-Age Population

In 2016 the Peel region had a total residential population of 130,336 and the rate of participation in the labour force at that time was 56% with an unemployment rate of 7%. Among the five Peel region's, Serpentine-Jarrahdale is forecast to experience significant population

growth as high as 128%. This presents a challenge for young persons living in Serpentine-Jarrahdale, as they currently have limited access to local education and career pathways beyond year 10, consequently, leading to an increased change of disengagement and trend of the workforce having to find work outside the LGA. In contrast, Mandurah has a projected 46% population increase (Figure 9). Mandurah, Murray, and Serpentine-Jarrahdale and Waroona are all expected to experience an increase in their workforce. Boddington is the only LGA that is expected to face a workforce population shortage.

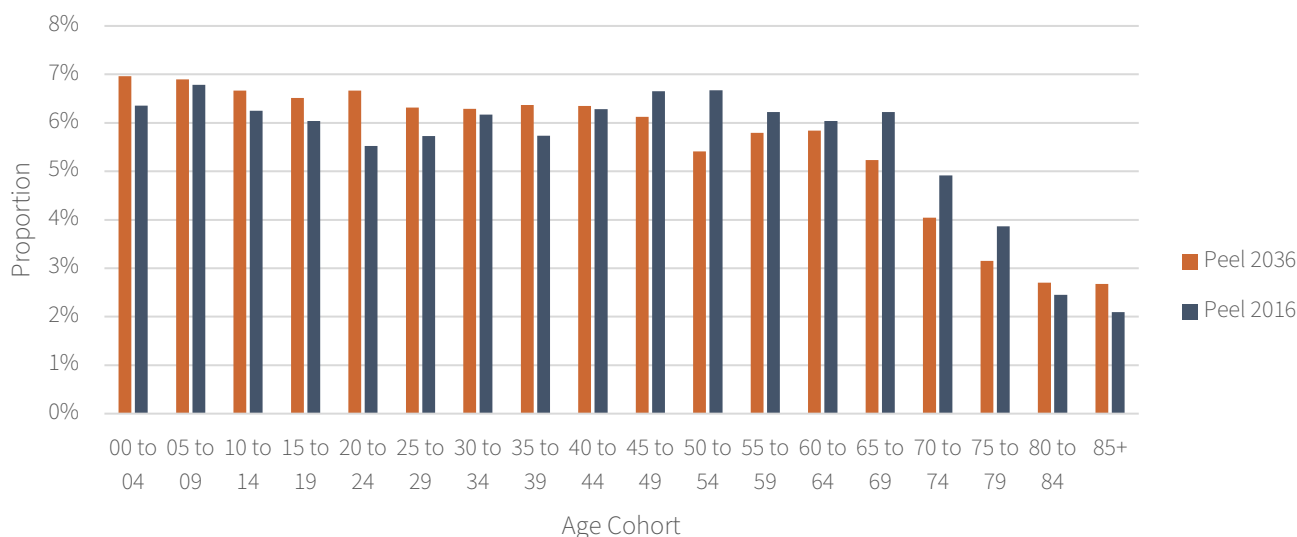
Figure 10 illustrates the population forecast in 5-year age groups.

Figure 9- The population change rate in the Peel region from 2006 to 2016



Source: ABS Census 2016. FAR Lane 2021.

Figure 10 – Peel population forecast

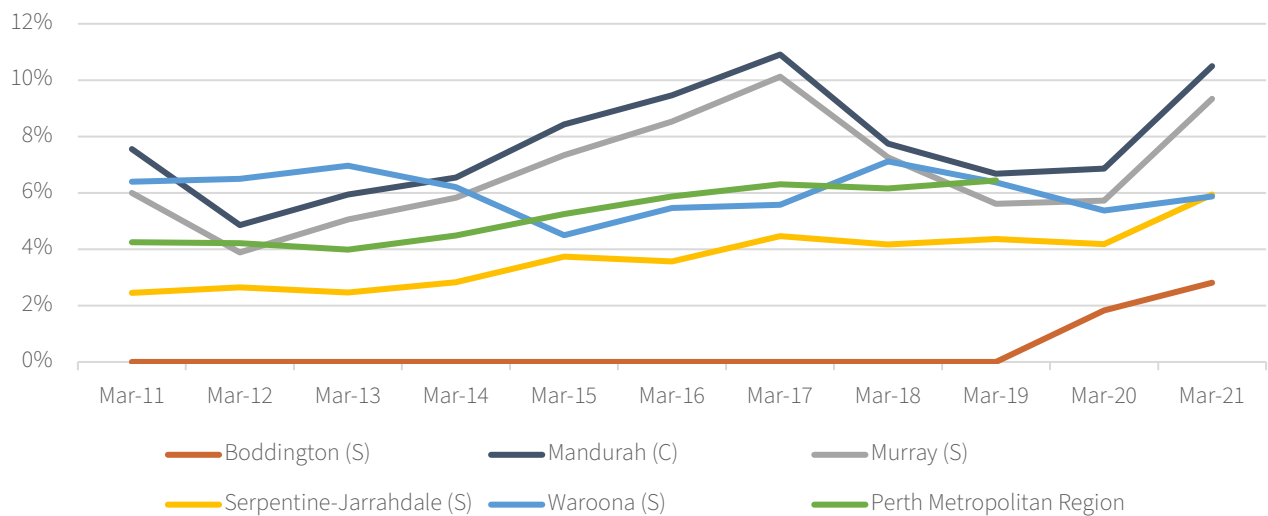


Source: WA Tomorrow 2016-2031, Far lane 2021.

## Unemployment Rates

The unemployment rates in the Peel region have seen a substantial increase since the onset of the COVID-19 global pandemic. Areas like Mandurah, Murray, Boddington have been more affected than others as employment within these LGAs tends to be concentrated across a small number of industries, for example, Retail Trade and Accommodation and Food Services. The LGAs with lower unemployment rates over time are Serpentine-Jarrahdale, Boddington, and Waroona (Figure 11).

Figure 11 - Unemployment rates by LGA



Source: SALM 2021, Far Lane 2021.

## Socioeconomic Index

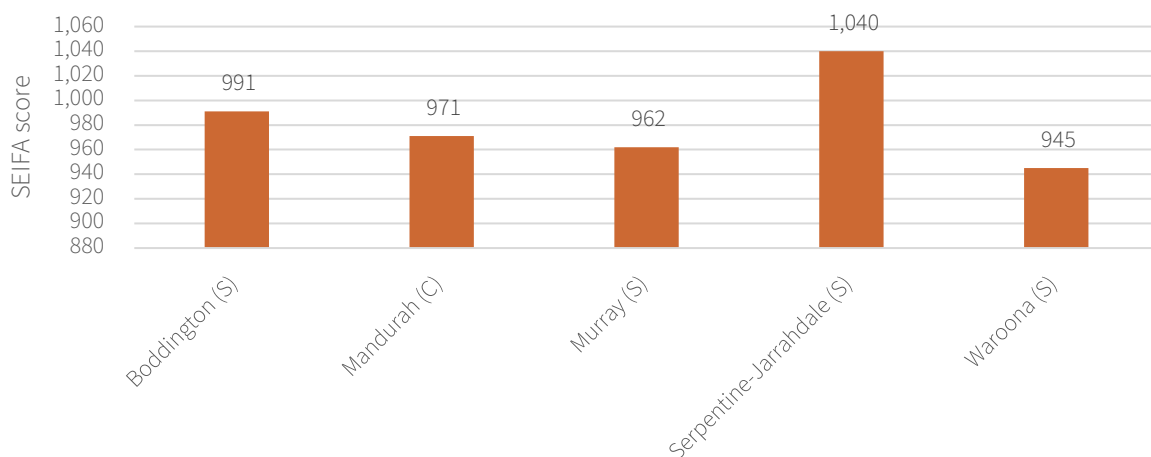
### SEIFA Index

#### Definition

SEIFA is an ABS tool that ranks areas in Australia according to relative socioeconomic advantage and disadvantage. The index summarises a wide range of information about the economic and social resources of people and households within the area. The median SEIFA score is 1,000. A score below 1,000 indicates relative disadvantage compared to other areas while a score above 1,000 indicates relative lack of disadvantage compared to other areas.

SEIFA scores suggest that the majority of LGAs within the Peel region have a relative socioeconomic disadvantage, apart from Serpentine-Jarrahdale, which has a relative advantage compared to other areas (Figure 12). The higher score in Serpentine-Jarrahdale may relate to the major roads and public transport networks that exist there, enhancing connectivity to business and logistics hubs like Kwinana and Henderson. The LGAs with lower scores are likely resulting from lower educational attainment and a smaller employment pool, as only 33% of the residential labour force work in the region.

Figure 12 – SEIFA IRSD index score by LGA



Source: ABS census 2016, Far lane 2021.

## ICSEA Index

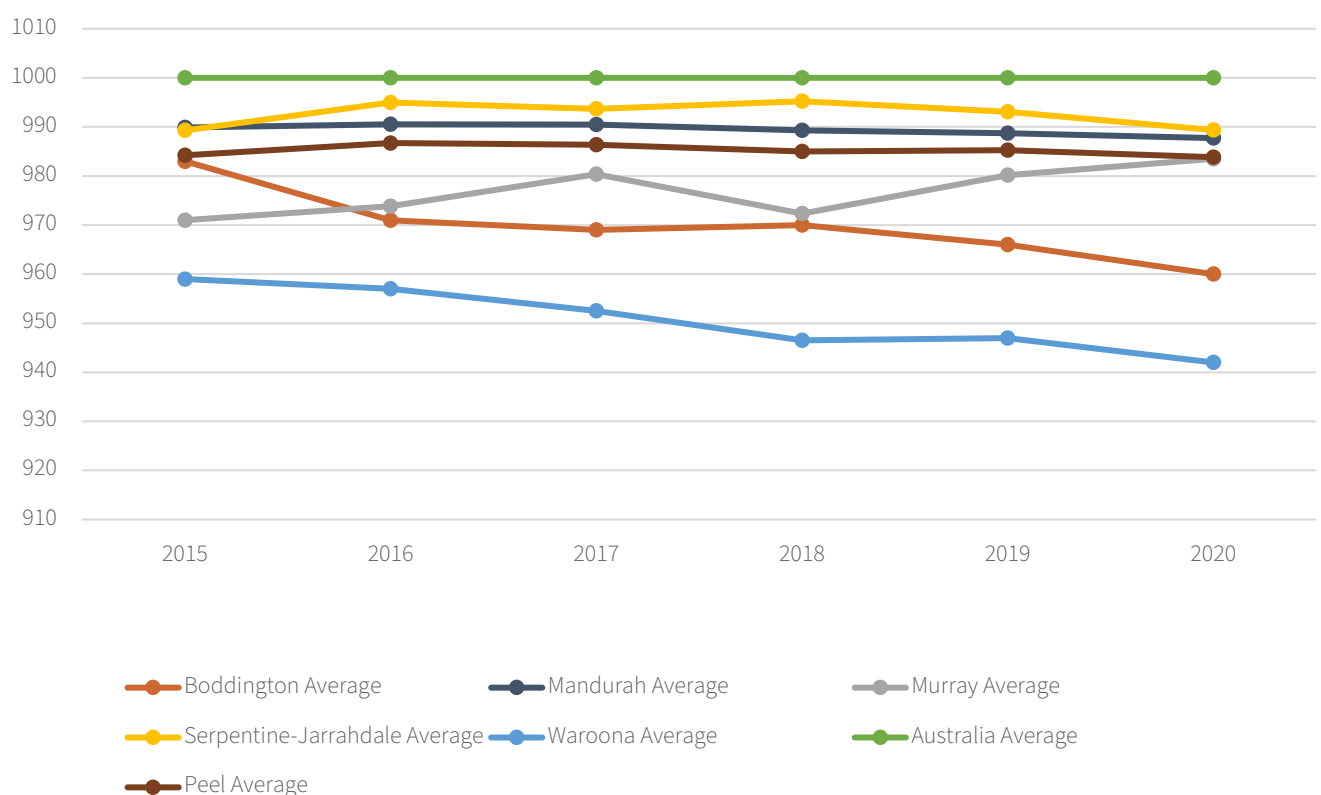
### Definition

The Index of Community Socio-Educational Advantage (ICSEA) is a scale of socio-educational advantage that is computed for every school in Australia. The development of ICSEA involves collecting family background data and identifying with a statistical model the combination of variables that have the strongest association with student performance in the NAPLAN results. Values are calculated on a scale that has a median of 1,000 and a standard deviation of 100. A score above 1,000 indicates socio-educational advantage, and a score below 1,000 indicates socio-educational disadvantage.

Data suggests that the average primary schools within the Peel region are below average and are at a social-educational disadvantage (Figure 13). The educational standard in primary schools should be specifically considered in Waroona and Boddington as they have experienced a decline in educational scores since 2015. Similarly, ICSEA data for secondary schooling (Figure 14) suggests that Boddington, Waroona, and the overall Peel regional average is at a social-educational disadvantage.

Analysis of ICSEA scores in the Peel region suggests that the majority of public schools are at a socio-educational disadvantage. The schools that are at an educational advantage relative to the national average are most commonly private schools.<sup>21</sup>

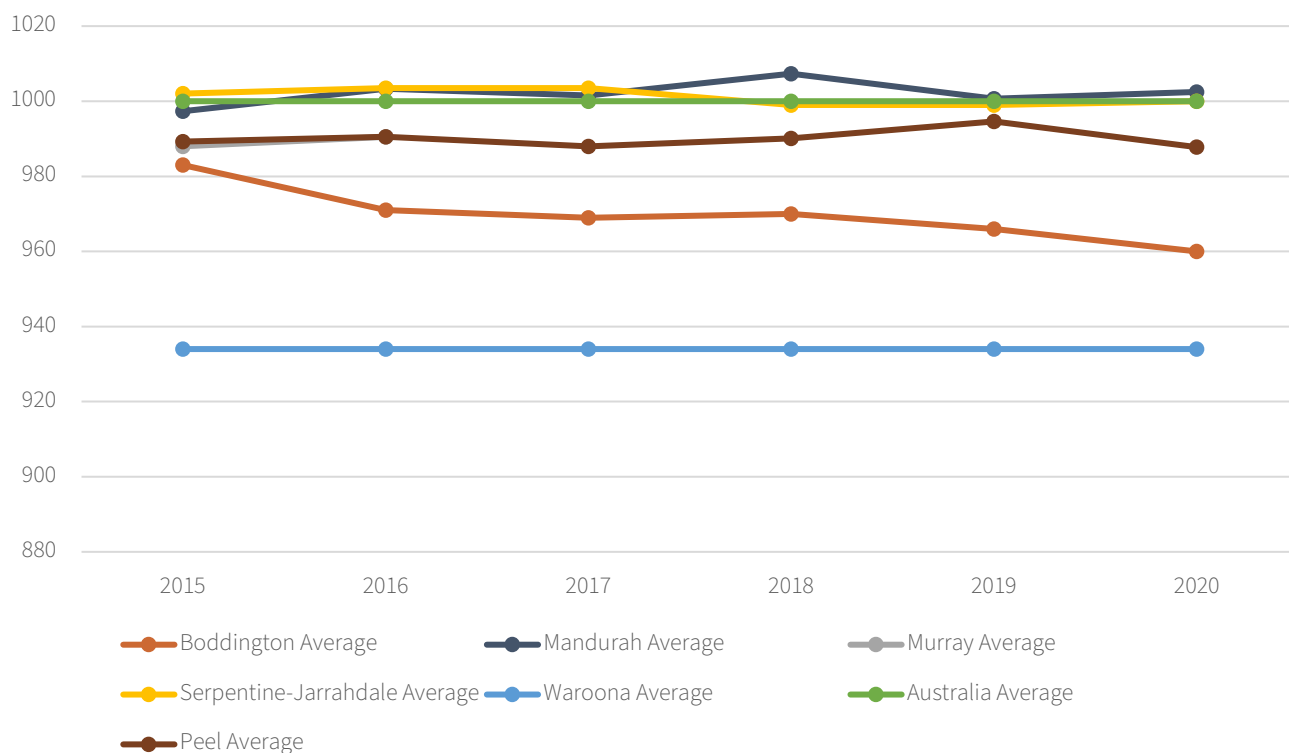
Figure 13 - Average primary school ICSEA scores by LGA



Source: ACARA 2020. FAR Lane, 2021.

<sup>21</sup> ACARA MySchool, 2021.

Figure 14 - Average secondary school ICSEA scores

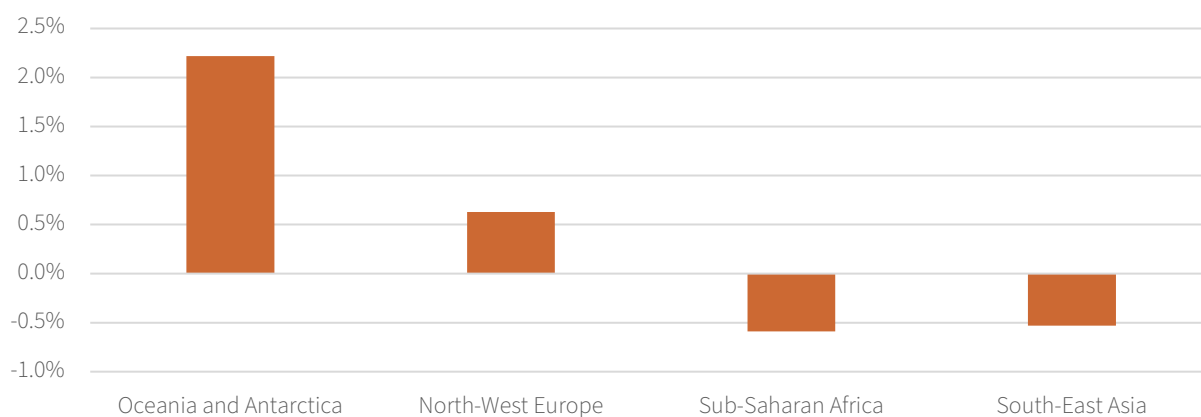


Source: ACARA 2020. FAR Lane, 2021.

## Immigration Characteristics

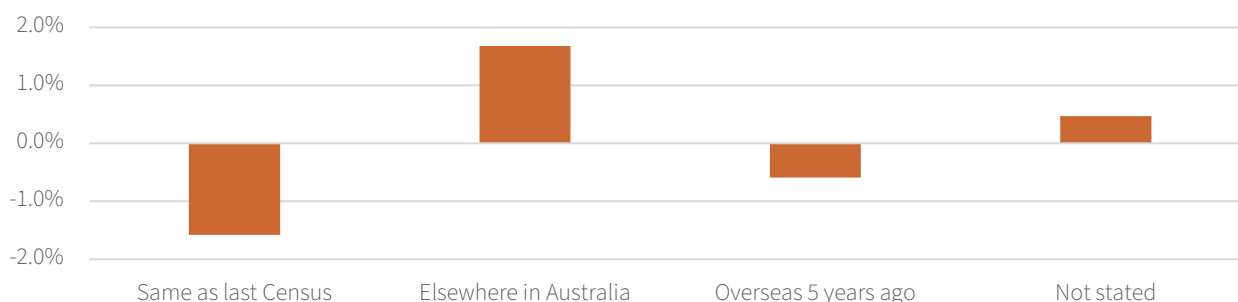
In 2016, 26% of the Peel region's residents were born overseas. Data suggests that the proportion of overseas-born residents has been decreasing since 2011 (Figure 15). Since 2011, the proportion of people who had another address in Australia 5 years ago has also increased (Figure 16), suggesting that the Peel region is attracting new residents. However, the region has a lower proportion of people born overseas compared to the state average (Figure 17).

Figure 15 - Percentage change in overseas born residents between 2011-2016



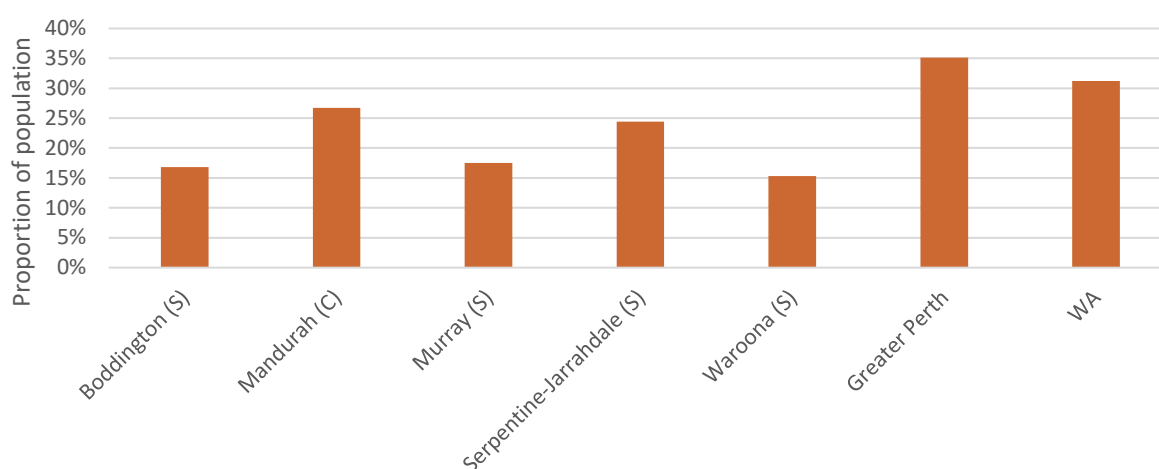
Source: ABS 2011, ABS 2016, Far lane 2021.

Figure 16 -Percentage change of persons usual address 5 years ago (Between 2011 and 2016) in the Peel region.



Source: ABS 2011, ABS 2016, Far lane 2021.

Figure 17 - Born overseas 2016 comparison



Source: ABS 2016

## Peel Away the Mask

In 2012, the Peel Away the Mask Report highlighted the following socioeconomic challenges facing communities within the Peel region, which are relevant to the region's ability to enhance strength and resilience within its population and produce capable people:

- Lack of community access (particularly within more remote LGAs) to health and community services including mental health services, Indigenous health and wellbeing, aged care, disability services and youth services (in particular crisis care);
- The strain on existing services, particularly health services, with communities relying on limited GP, emergency and allied health services. This was exacerbated by a lack of resourcing for early intervention programs and approaches which would reduce the burden on these services;
- Unclear and or incomplete regional service models and jurisdictions resulting in some areas and LGAs falling into service provision gaps and a general disparity of service provision across the Peel region;
- Decreasing access to affordable housing driven by increased population and strain on existing housing stocks in the region and resulting in an increase in people experiencing homelessness and the need for crisis accommodation;
- Increasing reporting of domestic and family violence. Unpublished data cited in the report suggested that the Peel Police District, at the time, had the second-highest incidents of domestic violence in Western Australia; and

- The lack of transport within and between key regional centres creates barriers for people when seeking or attending employment, going to school or study, or accessing health and community services.

Work is currently underway on updating the Peel Away the Mask report to capture changes across the region. Research conducted to date indicates that the above issues remain, and in many cases have been exacerbated by the impacts of the COVID-19 pandemic. Table 5 compares the Peel region's unemployment rate and SEIFA index score with our benchmark economies. The Peel region's unemployment rate is comparable to most benchmarks indicating it is not experiencing unique challenges in this area. Compared to benchmark economies, the Peel region has the lowest SEIFA score, indicating it has more complex social and economic characteristics that need to be addressed through targeted services.

Table 5 - Comparison of benchmark economy indicators

	Peel Region	Sunshine Coast	Mornington Peninsula	Greater Geelong	South-West Region	City of Wanneroo	Rockingham
<b>Unemployment Rate</b>	7%	7%	7%	6%	3%	9%	10%
<b>SEIFA Index</b>	983	1067	1030	994	993	1015	1,001

Source: ABS ERP 2016, Mornington Peninsula Shire 2019, REMPLAN 2020, Profile.id 2021, Economy.id 2021.

## Knowhow Capacity And Regional Economic Development Aspirations

Knowhow capacity relates to the following aspirations of the Peel Regional Blueprint:

- Capable people
- Strong and resilient communities

### Capable People

An aspiration for the Peel region is to have a multi-skilled and adaptable workforce, that can adapt to structural and technological change to support an economy that is strong, diverse and high performing. Currently, public schools across the whole region are at a socio-educational disadvantage; and the current workforce has low educational attainment compared to the state and national average.

Knowhow capacity factors that can facilitate a more multi-skilled workforce are:

- Programs to increase educational attainment and attendance for children and young people. This increases their chances of completing secondary school with the skills and capabilities to transition into tertiary education options;
- Removing barriers to school and training attendance through enhanced transport and connections within and between LGAs in the region; and
- Strong focus on showing students and young people the opportunities to live and work within the region and the pathways to those opportunities (for example jobs in tourism, food, agriculture, and population services).

### A Strong and Resilient Community

Complex challenges are facing the Peel region's communities, particularly those outside the city of Mandurah, who have less access to essential health and community services. Addressing barriers to education is only one part of the complex task of empowering individuals, families, and communities to achieve their aspirations. As highlighted in the Peel Away the Mask II Report there is a complex and interrelated framework of health and community support that is required to help lift families out of poverty.

To achieve the aspiration of a strong, vibrant, and resilient community that is empowered to contribute to the region's knowhow, the region is required to improve the current infrastructure and quality of health and community services.

*Table 6- Knowhow capacity gap analysis – Peel Regional Blueprint aspirations*

Goal	Indicator	Current	Gap
<b>Capable People</b>	By 2050, the educational attainment of Peel residents is above the WA state average.	40% in Peel 47% in WA	7 percentage points
	By 2050, Index of Community Socio-Educational Advantage (ICSEA) for our public schools is commensurate with independent school ICSEA.	Peel ICSEA 988	12 points to reach an average of 1,000
<b>Strong and Resilient Community</b>	By 2050, Index of Relative Socioeconomic Disadvantage (IRSD) is at a lower level of disadvantage to the national average.	SEIFA 983	17 points to reach an average of 1,000

**Note:** Educational attainment refers to qualifications higher than year 12. ICSEA scores are based on the Peel average of both public and private schools, the gap compares the region to the national average. Instead of the IRSD Index, the SEIFA index is used to measure socioeconomic disadvantage.

## KNOWHOW ENABLERS

Knowhow enablers refer to the systems, services and infrastructure that sit around the human capital pools that enable the development of necessary knowledge, skills, and talent to participate and enhance a regional economy. Examples include education and training providers, innovation support and service infrastructure.

- Education and training provision.
- Retention of talent.
- Scale and match of local infrastructure to trends.
- Start-up and innovation infrastructure.

### Education and Training Provision

#### School-Based Learning

The City of Mandurah is home to most primary and secondary education and training providers in the Peel region, as outlined in Table 7. District high schools in Waroona and Boddington finish at year 10, after which time students must go to Narrogin, Perth or Pinjarra to access years 11 and 12.

Table 7 – Number of primary and secondary education providers in the Peel region's LGAs (2020)

School sector	Boddington	Mandurah	Murray	Serpentine-Jarrahdale	Waroona
Primary	1	18	6	9	2
Secondary	1	8	2	2	1

Source: ACARA 2021.

#### Vocational Education and Training (VET)

VET is offered through a combination of schools, private training organisations and South Metropolitan TAFE. In the past 5 years, there has been a decline in course offerings, and some courses have been moved to Rockingham as well as to other areas. There have been ongoing concerns regarding the quality of training reported by industry in a 2017 study of workforce development in the region. The commencement decline has been noted, with students having to travel to Rockingham, Fremantle or Thornlie for block release training. Therefore, suggesting that the region has a mismatch of the education that is offered and what the population is wanting.

#### Tertiary Education

There is no local university based in the Peel region. However, Murdoch University's Mandurah campus offers a nursing program and post-graduate counselling. Local students must move or commute to metropolitan areas in which the universities are located to access other courses. This has implications for the population and future workforce, as these people are likely to build professional and personal connections outside the Peel region during their studies, increasing the probability that they will seek long term employment elsewhere.

Table 8 (following page) catalogues the available VET and Tertiary education providers in the Peel region and outlines their areas of focus. This helps us to understand the skills and training available in the area and how it relates to the Peel region's strategic and growth industries.

Table 8 - Peel based VET and tertiary education

Institution / Infrastructure	Location	Focus Area
<b>Mandurah Education and Training (PET) Campus</b>	Mandurah	Education hub combining multiple training providers (listed below)
<b><u>South Metropolitan TAFE</u></b>	Mandurah (PET)	Aerospace, maritime and logistics Agriculture, animals, science, and the environment Automotive Animal support Business and finance Building and construction Creative Industries Defence Education and Community Services Engineering and mining English, languages, and foundation studies Health, beauty, and fitness Hospitality, tourism, and events Information technology, library and digital
<b><u>Peel Jobs and Skills Centre</u></b>	Mandurah (PET)	Careers advice Training and employment opportunities advice Business and workplace development Aboriginal training and skills development
<b><u>Murdoch University</u></b>	City of Mandurah	Nursing Counselling and Creative Arts Therapies On-track enabling program
<b><u>Peel Health Campus</u></b>	City of Mandurah	Work experience program for the health services sector
<b><u>ECU Student Support</u></b>	City of Mandurah (Make Place)	Student Support and Advice
<b><u>Peel Hospitality Training Centre (Planning stages)</u></b>	City of Mandurah	Hospitality
<b>Private Registered Training Organisations</b>	Various locations	The Peel region is also home to a range of privately owned and operated registered training organisations (RTOs). Currently, there are six private RTOs that are registered into the Peel region, focusing on safety, hairdressing, and the delivery of VET courses <sup>22</sup> . This group does not capture RTOs which may be based in the Perth Metropolitan region (or other regions in Western Australia) but deliver online courses that can be accessed from Peel.

<sup>22</sup> Training.gov.au, 2021 search results

## Retention of Talent

In recent years, there has been a trend of migrations from regional areas to the coastal and metropolitan areas of Australia. The attraction and retention of professionals are emerging as a problem. According to Mackenzie the most common reasons for professional skill shortages are<sup>23</sup>:

- Rapidly expanding industries;
- Limited infrastructure or services;
- Less diverse culture, activities, or lifestyle;
- Limited professional development;
- Variable or seasonal demand for skills; and
- Low supply of trained staff.

Mining and construction are the biggest industries of employment. A big proportion of skilled workers are coming to the area due to these industries. Yet, the apprenticeship and traineeships for skills within these occupations has been decreasing, so the ongoing issue of the lack of skilled workers is likely to remain.

## Scale and Match of Local Infrastructure to Trends

The lower educational attainment matches the educational infrastructure that exists within the region. There are currently no direct linkages to formal education institutions, and there have been ongoing concerns about the quality of the VET programs that do exist in the area.<sup>24</sup> Additionally, there has been a decrease in course offerings in the past 5 years, increasing the gap between skills demanded and supplied within the region.

## Start-Up and Innovation Infrastructure

The extent to which an economy or place enables innovation, entrepreneurs and start-ups can significantly influence the ability to attract investment, new business, and visitors to a region, as well as to produce new products and services that can contribute to regional economic growth.

Innovation refers to the implementation of a new or significantly improved good, service, process, new marketing method; a new workplace organisational or business practices; or improved external relations<sup>25</sup>. There is a [range of definitions](#) for start-ups. For this report, start-ups refer to a company in the first stages of operations. Start-ups are often founded by one or more entrepreneurs who want to develop a product or service for which they believe there is demand. These companies generally start with high costs and limited revenue, which is why they look for capital from a variety of sources such as venture capitalists.<sup>26</sup>

The unique knowhow within a regional economy or industry can directly influence the productivity of an innovation ecosystem. Having a unique combination of skills, talent and knowledge interacting, collaborating, and engaging around common opportunities and challenges can be extremely powerful and lead to the development of innovation. This potential can be unlocked through targeted support for innovation and start-ups, which can be delivered by a range of mechanisms including innovation hubs, co-working spaces, access to advice and support, incubators, accelerators, workshops, and funding. Unique knowhow can

<sup>23</sup> McKenzie 2003 *Regional Skills Shortages*

<sup>24</sup> PDC 2017 *Peel Workforce Skills Analysis*

<sup>25</sup> OCED Glossary of statistical terms 2005

<sup>26</sup> Investopedia 2021.

be nurtured through support that is industry or sector-specific or brings together different industries in a way that is not done elsewhere.

Entrepreneurs and innovators located in the Peel region have varied access to a range of services, infrastructure and mechanisms which support start-ups and innovation. Table 9 provides a catalogue of identified services and infrastructure, and identifies the following:

Table 9 - Peel based start-up and innovation services and infrastructure

Service / Infrastructure	Type	Location	Start-up support	Innovation support	Focus area	Status
<b><u>Western Australian Food Innovation Precinct</u></b>	Precinct / Hub	Peel Shire of Murray as a hub. Spokes potentially other LGA	Yes	Yes	Food production Agriculture Research and development Export and product licencing.	Completion in 2022.
<b><u>Peel Bright Minds</u></b>	Aspiration building	Peel Shire of Murray	No	Yes	STEM	Operational
<b><u>Shire of Murray Community and Economic Development</u></b>	Support & Advice	Peel Shire of Murray	Yes	No	LGA focus	Operational
<b><u>The Court House</u></b>	Co-working	Peel Shire of Murray	Yes	No	General	Operational
<b><u>Shire of Serpentine-Jarrahdale Business Support</u></b>	Support & Advice	Peel Shire of Serpentine-Jarrahdale	Yes	No	LGA focus	Operational
<b><u>Shire of Waroona</u></b>	Support & Advice	Peel Shire of Waroona	Yes	No	LGA focus	Operational
<b><u>Make Place</u></b>	Co-Working & Support	Peel City of Mandurah	Yes	Yes	General Hub for Edith Cowan University	Operational
<b><u>Startup Smart Creative, City of Mandurah</u></b>	Learning	Peel City of Mandurah	Yes	No	Sustainable products	Operational
<b><u>Visit Mandurah</u></b>	Support & Advice	Peel City of Mandurah	Yes	No	Tourism	Operational
<b><u>Business Advisory South-West &amp; Peel</u></b>	Support & Advice	Peel City of Mandurah	Yes	No	General	Operational
<b><u>Mesh points</u></b>	Support & Advice	External but accessible in Peel	Yes	Yes	General	Operational
<b><u>Agri-start</u></b>	Service	External but accessible in Peel	Yes	Yes	Agriculture Technology	Operational
<b><u>Perth Angels</u></b>	Funding	Perth, but accessible	Yes	Yes	General	Operational
<b><u>Startup WA</u></b>	Network & Advocacy	Perth / WA but accessible	Yes	No	General	Operational
<b><u>Small Business Development Corporation</u></b>	Support & Advice	Perth but accessible	Yes	No	General	Operational

Service / Infrastructure	Type	Location	Start-up support	Innovation support	Focus area	Status
<b><u>New Industries Fund (NIF): Sponsorships – Dep Jobs, Tourism Science, and Innovation</u></b>	Funding	External but accessible in Peel	Yes	Yes	Mining Energy Health Food Environment Space Technology STEM	Operational
<b><u>WA Innovator of the Year (JSTI NIF)</u></b>	Awards	External but accessible in Peel	No	Yes	As above (NIF)	Currently closed pending next round
<b><u>Science Industry PhD Fellowship Grants (JTSI NIF)</u></b>	Funding	External but accessible in Peel	No	Yes	As above (NIF) Research and development Sciences	Currently closed pending next round
<b><u>Innovation Vouchers (JTSI NIF)</u></b>	Funding	External but accessible in Peel	Yes	Yes	As above (NIF)	Currently closed pending next round
<b><u>X-TEND WA (JTSI NIF)</u></b>	Funding	External but accessible in Peel	No	Yes	As above (NIF)	Currently closed pending next round
<b><u>Business Foundations</u></b>	Support & Advice	Perth, but accessible	Yes	No	General	Operational
<b><u>Centre for Entrepreneurial Research and Innovation</u></b>	Support, Learning Advice, Funding	Perth, but accessible	Yes	Yes	General	Operational
<b><u>SPUR Location Grants Program</u></b>	Funding	Perth, but accessible	No	Yes	Location data Property sector	Currently closed pending next round
<b><u>Plus 8 Accelerator</u></b>	Funding, Learning & Support	Perth, but accessible	Yes	Yes	General	Operational
<b><u>Alpha Incubation Group</u></b>	Funding, Learning & Support	Perth, but accessible	Yes	Yes	General	Operational
<b><u>Entrepreneurs Programme (Aus Gov)</u></b>	Support & Advice	Australia wide service	Yes	Yes	General	Operational
<b><u>The Court House Pinjarra</u></b>	Co-working space & support	Pinjarra, Shire of Murray	Yes	No	General	Operational

### Multi-Skilled and Competent Workforce Development

Future planned industry development will require targeted human capital development initiatives. A key need identified for the Transform Peel project is a multi-skilled workforce with enhanced core capabilities and competencies (e.g., communication, problem-solving, time management).

This type of skills development begins in early education and is informed by the experiences and support that young people receive inside and outside of the education system. The way the education is delivered by systems, courses and practitioners will impact to what extent a young person develops good critical thinking, project management, communication, decision making, time management skills. These types of skills are often addressed in adults through

professional development courses that are offered by employers, as well as on the job experience.

In the Peel region, lower average education attainment levels suggest that opportunities to develop these types of skills may be less compared to other regions. The earlier someone leaves the education system, the less time they must develop those skills, particularly as they near adulthood where the focus on these skills within the school education system is likely to increase. Following this, access then becomes through work experience and any vocational education programs. Quantifying to what extent this is happening within workplaces and training institutions is challenging. However, it can be assumed as a priority moving forward that should be considered by schools, training providers and employers to empower individuals with stronger core competencies and skills.

## Benchmark Comparisons

Benchmarking knowhow enablers is more challenging, as information about the existence of enabling infrastructure services is not readily available.

The Sunshine Coast Council is one benchmark economy that does have some consolidated information available, which appears to have arisen due to its prioritisation of building a vibrant and productive innovation and entrepreneurial ecosystem. While the Peel region and Sunshine Coast Council have a similar number of VET and Tertiary education providers, the Sunshine Coast is home to the Sunshine Coast University, enabling the provision of regionally focused courses supported by strong university infrastructure and services (as opposed to satellite campuses). This potentially provides a stronger level of 'control' over the development of knowhow that requires higher levels of education.

Sunshine Coast is also home to approximately 10 co-working spaces, whereas only two were located in the Peel region. This suggests that there is a more active entrepreneurial community, with individuals who are exploring new ideas and ventures, and require low-cost/flexible working spaces while they commercialise and grow. It is unclear whether a relative lack of co-working spaces in the Peel region is due to lack of demand or lack of supply. If the former, it suggests that the ecosystem might not be conducive to start-ups, there are not enough or attractive co-located businesses or industries to encourage people to innovate or that the types of start-ups in the region require more complex infrastructure.

## Knowhow Enablers and Regional Economic Development Aspirations

### Thriving Industries

To enhance the diversity of the regional economy and create globally competitive industries, investment is required into developing the workforce skills that are required for the strategic industries identified by the Peel Regional Blueprint.

The Peel region in general has limited spaces that are dedicated to start-ups and innovators, where they can make connections and networks and access advice in person. Currently, most innovation and start-up support are Mandurah centric. Local Government Authorities generally had small business and start-up advice through online resources or business information hubs/teams; however, this could not be located for the Shire of Boddington when conducting a web search.

### Agricultural and Food Innovation

Peel's agriculture and food production sectors are planned to be enhanced through continued innovation, investment, and research. The WA Food Innovation Precinct being constructed in the Shire of Murray is expected to support diversification of the Peel economy, the development of new agri-businesses and products and drive economic growth and employment opportunities within the sector. To create the skills needed for the new agri-

food business and peripheral services, consideration for new linkages to tertiary education institutions or improvement of existing education is required.

Food and agriculture start-ups and innovation will be supported through the WA Agri-Food Innovation Precinct; which is currently under construction at the Peel Business Park. While the core infrastructure will be situated within the region, the facility will transition to a hub and spokes model providing value to state's agriculture and agrifood manufacturing sectors more broadly. While the WAFIP is due for completion in 2022, the facility and its partners will support industry through various operational programs.

Following construction there may be a delay in realising the start-up and innovation ecosystem pending industry uptake, although the X-Protein lab and GrowHub activities are already underway. It does, however, represent a planned future resource that has the potential to significantly support the regional ecosystem. Tertiary education opportunities relating to Food and Agriculture are limited in the region, representing a misalignment with future economic aspirations, which will be partially met through the WAFIP via Murdoch's Food Futures Institute.

### Tourism Excellence

An aspiration is that by 2050, the Peel tourism economy will have tripled. To facilitate this aspiration, the skills and workforce required to service a vibrant and growing tourism industry are required. The VET commencement data suggests a lack of skills within these industries; however, it is important to note that many jobs within these industries do not require formal education.

There is currently limited tourism focussed start-up or innovation support based in the Peel region (that could be identified). Visit Mandurah offer general support for tourism development and enterprises within the City of Mandurah. Tourism WA and the Tourism Council of Western Australia have online resources dedicated to tourism development, but not workshops or targeted, in-person advice that could be accessed by someone wishing to start a tourism enterprise. Support would need to be accessed via more general mechanisms and services, most of which are not based in the Peel region but could be accessed externally.

### Key Regional Industry Development Projects

Future planned industry development projects will require targeted human capital development initiatives. A key need was identified for a multi-skilled workforce with enhanced core capabilities and competencies. This type of skills development begins in early education and is informed by the experiences and support that young people receive inside and outside of the education system. The way the education is delivered by systems, courses and practitioners will impact to what extent a young person develops good critical thinking, project management, communication, decision making, time management skills. These types of skills are often addressed in adults through professional development courses that are offered by employers, as well as on the job experience.

*Table 10 - Knowhow Enablers Gap Analysis – Peel Regional Blueprint aspirations & industry development projects*

Goal	Indicator / Goals	Current	Gap
<b>Thriving Industry</b>	By 2050, the higher educational attainment of Peel residents is above the WA state average	9% in Peel 21% in WA	12%
	Peel residents who seek to participate in training and workforce development programs that meet the needs of the individual and industries	<b>Agriculture and food:</b> South Metro TAFE: Horticulture and Food Preparation / Cooking, IT, Electrotechnology.	<b>Agriculture and food:</b> Provision of Tertiary level Food Science and Agricultural Science education and training.

Goal	Indicator / Goals	Current	Gap
	<p>are accommodated within the region.</p> <p>Also relevant to regional industry development project themes:</p> <ul style="list-style-type: none"> <li>Increased need for skills development relating to tourism and hospitality industries.</li> <li>Increased need for skills development relating to STEM, ICT, food, and agriculture industries.</li> <li>Provisions of start-up and incubator support.</li> </ul>	<p><b>Tourism:</b> South Metro TAFE: Hospitality, tourism &amp; events</p> <p><b>Start-up and innovation</b> Mandurah focused, industry agnostic.</p>	<p><b>Tourism:</b> Delivery of Peel Hospitality Training Centre</p> <p><b>Start-up and innovation</b> Outreach innovation and start-up support/network to service other LGAs.</p> <p>Tourism focused start-up and innovation support.</p> <p>Delivery of WA Agri-food Precinct.</p>
	<p>Peel young people who seek to participate in industry priority pathways programs will fulfil their career aspirations within the region.</p>	<p><b>Agriculture and food:</b> South Metro TAFE: Horticulture and Food Preparation / Cooking.</p> <p><b>Tourism:</b> South Metro TAFE: Hospitality, tourism &amp; events</p> <p><b>A multi-skilled and highly competent workforce</b> Current status unknown, but identified as a priority</p>	<p><b>Agriculture and food:</b> Provision of Tertiary level Food Science and Agricultural Science education and training.</p> <p><b>Tourism:</b> Delivery of Peel Hospitality Training Centre</p> <p><b>A multi-skilled and highly competent workforce</b> Enhanced through school, training, and employer programs.</p>

**Note:** Higher educational attainment refers to a bachelor's degree or higher.

## KNOW HOW APPLICATION

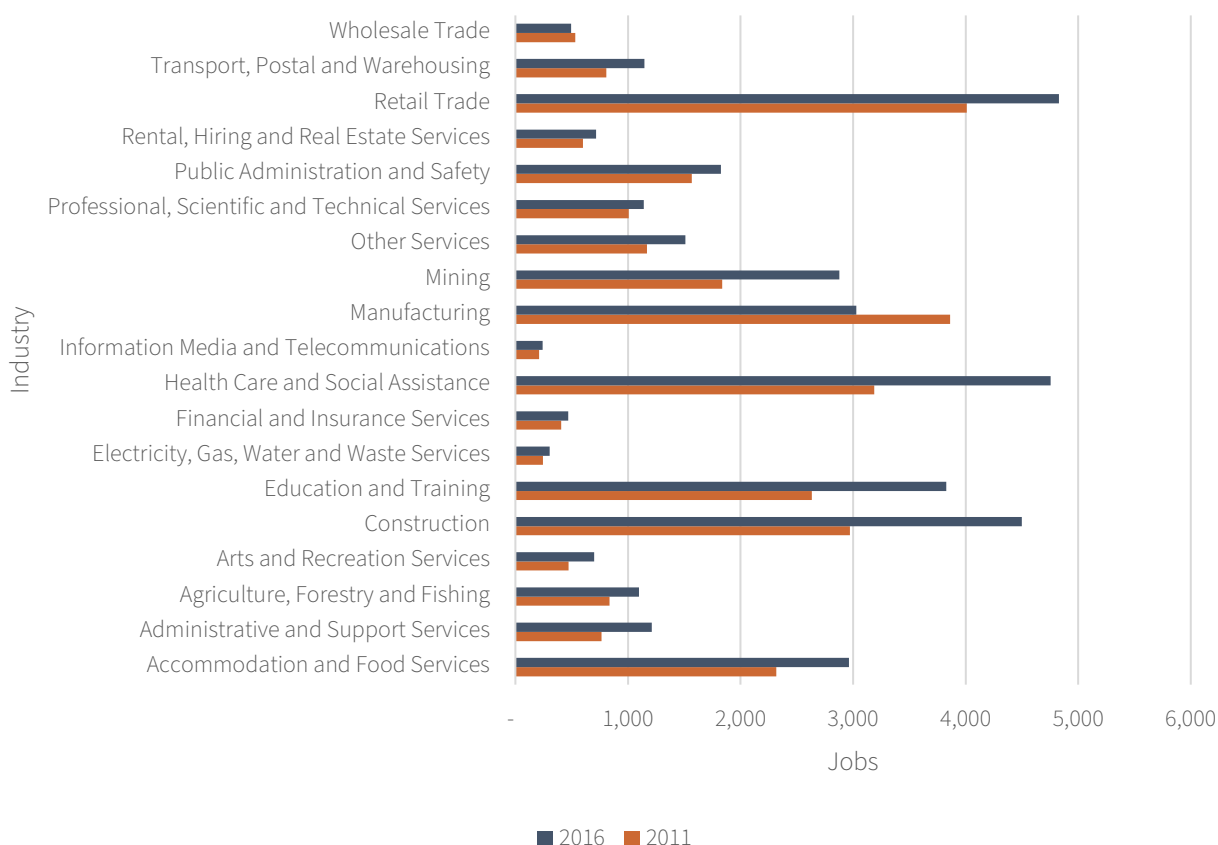
Knowhow applications refer to how talent, knowledge and skills are being applied within an economy. This includes the types of jobs that exist and in which industries. It also looks at who is working in the economy, do they live locally or externally? And is knowhow being used to start new businesses in the region? This chapter will profile the application of knowhow in the Peel region through the following indicators:

- Industry of employment;
- Job types – diversity and level;
- Traded and local clusters and local employment;
- Job type and local employment; and
- Local start-ups and SMEs by cluster.

### Industry of Employment Within the Peel Region

The main employing industries are Retail Trade, Health Care and Social Assistance and Construction (Figure 18). Data suggests an increase in jobs within all industries. Of the total 37,600 jobs, 60% existed in Mandurah.

Figure 18 - industry of employment change the Peel region



Source: ABS 2011, ABS 2016.

To gain a better understanding of what skill is leaking into and out of the region, the Employment Self Containment and Employment Self Sufficiency have been assessed.

### Definition

Employment Self-Containment (ESC) refers to the percentage of employed residents who are employed within the boundary of the Local Government Area.

Employment Self-Sufficiency (ESS) measures the proportion of local workers in the local area who also live in the LGA or region. It indicates the level at which the resident workers meet the labour requirements of the local industries or businesses. Self-Containment and Self-sufficiency are likely to be higher for regional areas, and lower in metropolitan areas and is influenced by:

- Employment opportunities versus the skills and qualifications of residents.
- Transport options available and commuting times.
- Relationship between wages and salaries and house prices.
- The geographic size of the area.

The overall ESS within the Peel region was 51% in 2016, indicating that 51% of residents also work within the area. The overall ESS was 75%, suggesting that there are fewer jobs (38,000) than workers (50,000), and that skill is leaking out of the region. The employment self-containment levels are higher in Accommodation and Food Services, Forestry and Fishing and Retail Trade, meaning that employment within these industries is filled by residents (see Figure 19). The biggest industry of employment varies between the LGAs. In the more regional areas, the biggest employer is those relating to mining and agricultural activities, likely occurring from the land and natural resources that exist there. In Mandurah, the biggest industries of employment are Health Care, Retail Trade and Education and Training, likely resulting from Mandurah being the centre of the region.

Figure 19 - Employment self-containment the Peel region



Source: ABS census 2016, REMPLAN 2021, FAR lane 2021.

### Boddington

The Boddington workforce mostly works within the Mining industry with an overall ESS of 78%<sup>27</sup>. The ESS is relatively low at 29% indicating there are more jobs than workers within the area. Boddington has 1,400 jobs that are filled by workers living elsewhere suggesting that skills and talent are being imported into the region.

<sup>27</sup> Source: ABS census 2016, REMPLAN 2021.

### **Mandurah**

Compared to the other LGAs within the Peel region, Mandurah has a relatively low ESC at 50%<sup>28</sup>. This is likely due to better connectivity to key infrastructures such as railroads and other major roads. The most common industries of employment are Construction, Health Care and Social Assistance and Retail trade. Retail Trade, Accommodation and Food Services have the highest self-containment which is likely to be reflected by Mandurah's larger town centre. Mining, Electricity, Gas, Water and Waste Services, and Construction have the lowest ESC which suggests a lack of skilled workforce to service these industries, requiring workforce to be imported from outside the region.

### **Murray**

In Murray, the ESC was relatively low at 36%<sup>29</sup>. Data indicates that the industries with high ESC are Agriculture, Manufacturing, and Retail trade. Many local workers work within Mining, Construction, Retail trade. Data also indicates that that skill is leaking out from the area, especially in industries such as Health Care and Social Assistance, Mining, and Professional Services. This may be a result of the connectivity to major roads and other industrial and logistic hubs nearby. Data suggests that there are limited employment opportunities across all industries with the Shire of Murray.

### **Serpentine-Jarrahdale**

The total ESC in Serpentine-Jarrahdale was 19% in 2016<sup>30</sup>, meaning that only 19% of the population both live and work in the area. The ESC by industry shows that the Self-Containment is highest within Agriculture, Forestry and Fishing at a containment of 76%. However, the overall ESC is relatively low across industries reflecting a lack of existing job opportunities within the area and that skill is leaking out. In 2016, most residents had jobs in Construction, Health Care and Social Assistance and Retail industries. Of the 4,800 people who work in the area, 2,300 people also live in the area (48% ESS). Seeing that the LGA is expecting rapid population growth, the region may be at risk if the planned projects do not proceed as planned to diversify the current employment opportunities.

### **Waroona**

The total ESC in Waroona was 52% in 2016. Employment is centred in Manufacturing, Construction and Mining. These industries similarly have very low ESC, which may be a result of a lack of skill of the local workforce to service these industries. The ESC suggests that the industry of employment across industries are uniformly distributed. Of the 2,300 people working in Waroona, only 820 also live there (36%), indicating that Waroona currently relies on an externally residing workforce.

## **Health Care and Social Assistance Industries of Employment**

Since Health Care and Social Assistance is a big industry of employment, it has been analysed in more detail (Figure 20). In Mandurah, the biggest proportion of workers work in Aged Care Services, Hospitals and Social Assistance. Mandurah has the most diversified distribution of employment.

In Serpentine-Jarrahdale the biggest proportion of workers work in Child Care Services, Aged Care Services and General Practice Medical Services. This reflects the region's characteristics as more families are living in this LGA compared to others.

<sup>28</sup> Source: ABS census 2016, REMPLAN 2021.

<sup>29</sup> Source: ABS census 2016, REMPLAN 2021.

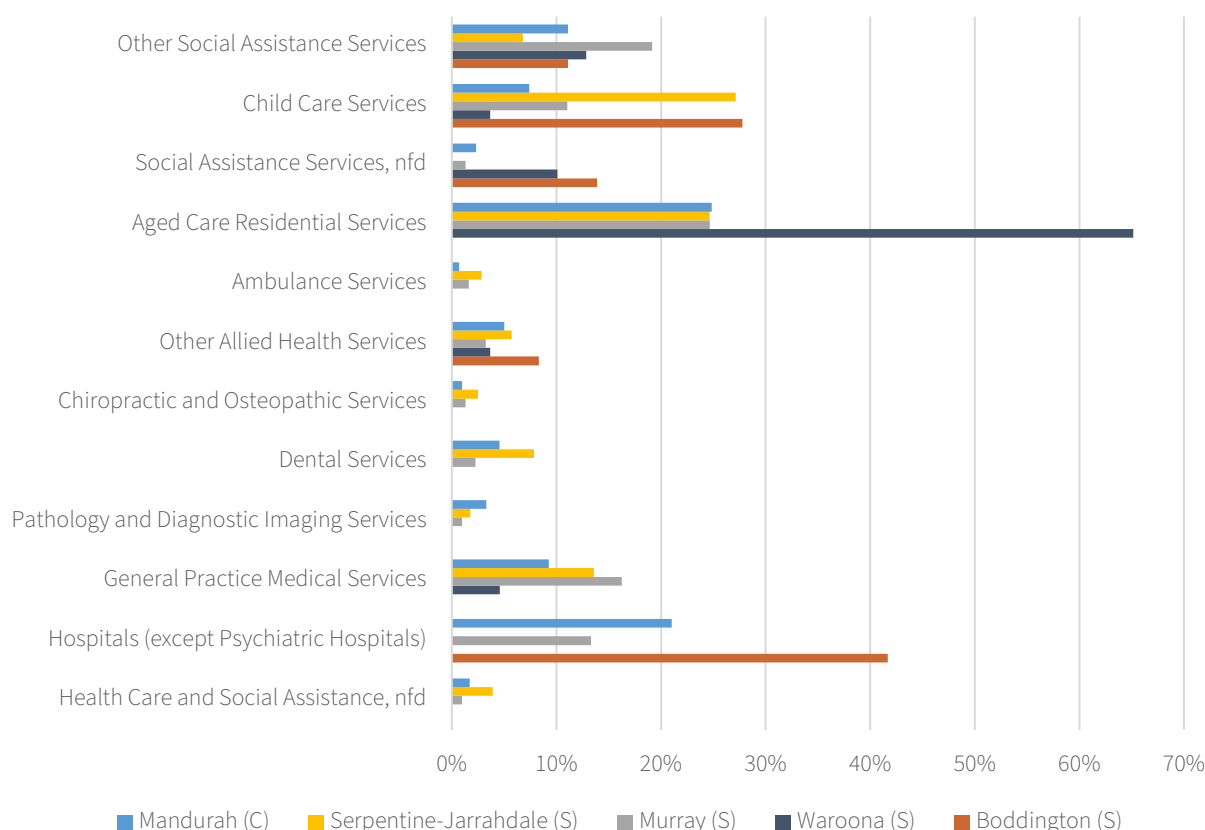
<sup>30</sup> Source: ABS census 2016, REMPLAN 2021.

In Murray, the biggest proportion of workers work In Aged Care Services, Social Assistance and General Practice Medical Services.

There are 109 workers within this industry in Waroona, the majority of workers work in Aged Care Services which are likely due to an older population proportion within the LGA.

In Boddington, the biggest proportion of workers work in Hospitals and Child Care Services. Note that there are only 36 workers within the Health Care and Social Assistance industry in Boddington.

Figure 20- Health care and social assistance detailed industry of employment



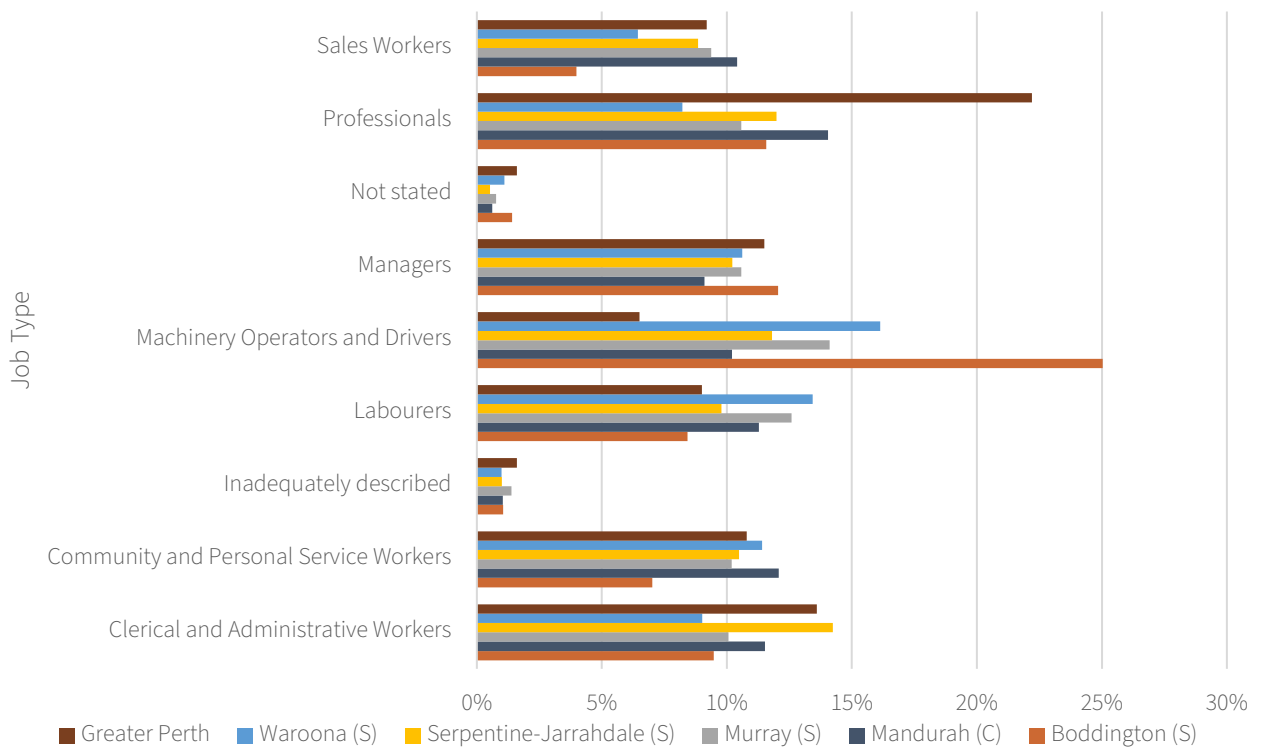
Source: ABS 2016, Far lane 2021.

## Job Types Within the Peel Region

To gain an understanding of what skills exists across the LGAs, the types of occupations have been analysed within each LGA, based on the workers' place of residence (Figure 21).

The local workers within the Peel region generally work in occupations that do not require a high tertiary education. Compared to Greater Perth, Peel has a significantly lower proportion of people working as professionals (13% compared to 22%). Professionals have an important role in the community as they generally have higher paying salaries that contribute to local economic growth, the Peel region is therefore at a disadvantage seeing the low proportion of professionals, which may explain the region's low SEIFA index scores.

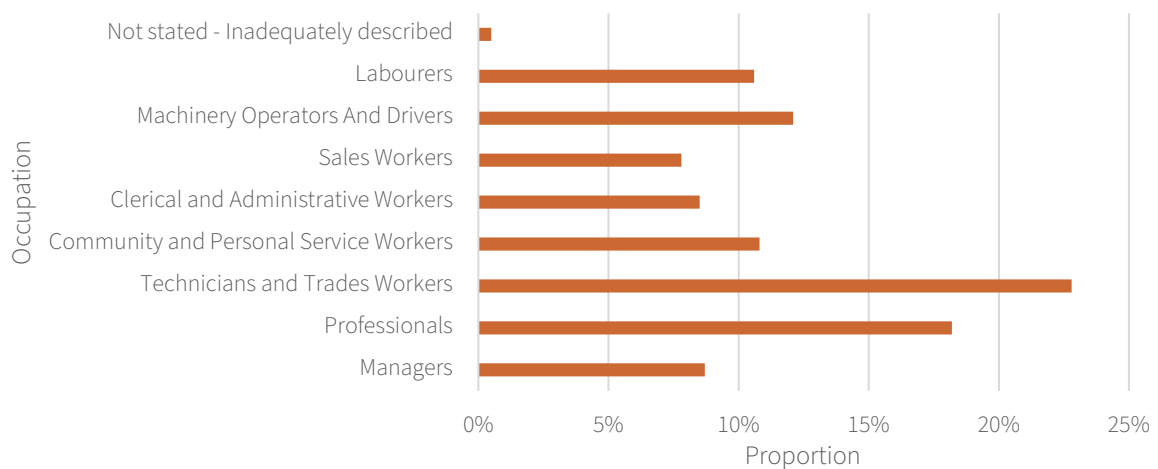
Figure 21 - Occupations of local workers by LGA



Source: ABS Census 2016, FAR lane 2021.

Figure 22 illustrates the proportion of occupation by local workers who live elsewhere. Data suggests gaps within the skills required for the current employment opportunities, as 20% of local workers live elsewhere. Of these workers, the skills that are coming into the region are technicians and trades workers (23%) as well as a high proportion of Professionals (18%). This is a critical point as Professionals tend to have higher-paying salaries affecting economic outputs and contributions to the local economy and enhancing socio-economic standards. The lack of Professionals that reside in the area may be connected to the relatively low SEIFA index score of 983.

Figure 22 - Occupation by Local Workers Who Live Elsewhere



Source: REMPLAN 2019, FAR lane 2021.

In Boddington, most local workers work as Machinery Operators and Drivers (25%), Technicians and Trades Workers (20%) and Managers (12%). The LGA has the biggest proportion of Manager within the whole of the Peel region. This is likely to be influenced by the mining activities occurring in Boddington.

In Mandurah, 20% of local workers are Technicians and Trades Workers. The LGA has a bigger proportion working as Professionals (14%), compared to the other LGAs, yet lower than Greater Perth's proportion (22%). Mandurah additionally has the highest proportion of Sales Workers compared to other LGAs which seems likely to result from Mandurah being a larger professional and population services centre.

In Murray, a large proportion of local workers have occupations that do not require any tertiary education, as 20% of local workers are Technicians and Trades Workers, 14% Machinery Operators and 13% are Labourers.

In Serpentine-Jarrahdale, the biggest proportion of workers are Technicians and Trades workers (21%), followed by Clerical and Administrative workers (14%), Machinery Operators (12%) and Professionals (12%).

In Waroona, the biggest proportion of local workers are Technicians and Trades Workers (23%), following Machinery Operators (16%), and Labourers (13%). The LGA has the lowest proportion of Sales Workers, and Professionals compared to the remaining LGAs within the region.

### Trends in Knowhow Pools

To gain a better understanding of the diversity of employment opportunities within the Peel region Shannon's index has been used. The formula and calculation can be found in the Technical Appendix.

The Shannon Index data suggests that Boddington has the least diversified employment opportunities within the Peel region. The region may therefore be more vulnerable to external shocks as most employment exists within one industry (Mining). In contrast, Murray and Serpentine-Jarrahdale have the most diversified employment opportunities in the Peel region (Table 35). The Table suggests that the Peel region is similar to Sunshine Coast and Greater Geelong and has similar diversity trends across industries (Greater Perth has a diversity index of 2.712).

### Cluster Analysis

#### Definition

According to Cluster Mapping US, clusters are defined as: "A regional concentration of related industries in a particular location."

Based on US cluster mapping best practice, cluster definitions were adapted for an Australian context. Individual industries (ANZSIC 4-digit level) from ABS data were assigned to relevant clusters, which enables the classification of industry clusters.

Established clusters may include interrelated firms, suppliers, complementary service providers, Government agencies, educational institutions, and other shared infrastructure. There are no strict guidelines regarding the scale of economic activity or industry concentration that constitutes a cluster. However, when economic and performance benefits accrue to firms because of industry concentration it is likely to be considered a cluster.

Analysis was carried out to examine pre-existing clusters within the region. Results of the analysis have been summarised and ranked using two key outputs for each Local Government Area:

- Employment Concentration Factor (ECF) that has been derived from the regionalised cluster model; and
- The total number of jobs.

It is important to note that specialised industries tend to be traded industries. Traded industries are associated with higher average wages and higher productivity compared to local industries and are an important focus when increasing regional strengths. These industries are more likely to support employment through supply chain linkages. Available data may not reflect this and is not able to fully reflect complex relationships between employment, industries, and clusters.<sup>31</sup>

The cluster analysis suggests that there are identified clusters arising from the natural resources available due to the abundance of land and natural resources existing in the Peel region. This relates to industries like Metal Mining, and Metal Manufacturing and Downstream Metal Products which are all traded industries that contribute to regional economic growth and development. The cluster analysis is shown in more detail in the appendix.

### Local Start-Ups by Clusters

Start-ups play a significant role in economic growth and prosperity by creating jobs and supporting local employment. Additionally, start-ups can contribute to economic growth through innovation and competition. New entrepreneurs can bring new ideas to the table that enhance innovation and generate competition which is essential for a prosperous economy. For this report, the start-ups' data suggests the entrepreneurial talent and start-up infrastructure that exists within each LGA.

#### Definition

For this analysis, and based on available datasets (Australian Business Register), the definition start-up requested by the PDC for this study is defined as a business that:

- Has initiated operations in the 5 years between 2016 and 2021.
- Identifies in the ABR as a company, individual and partnership entity type (to filter out “white noise” such as trusts).
- Has an active GST status.
- Currently operates within a traded industry class.
- Has a business address that can be geographically identified.

This definition has been chosen to reduce the inclusion of businesses that are not likely to be start-ups (superannuation funds, local service businesses) and to maximise the utility of the data for this piece of work.

Most start-ups (56%) within the Peel region are based in Mandurah (Figure 23). Across the Peel region, the most concentrated industry is Metal Mining and Agricultural Inputs and Services likely resulting from the region's abundance of land and natural resources (Table 11). The industries which have relatively high concentration factors, tend to have lower numbers of start-ups. This is likely arising from the significant capital requirements for heavy industries, resulting from a few big dominating firms.

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<sup>31</sup> Clustermapping.us, 2020.

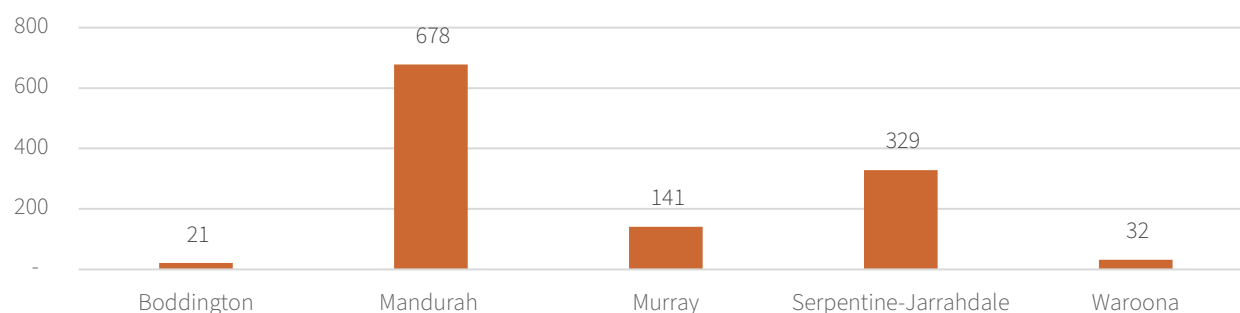
Table 11- Previous Identified Clusters

Cluster	Jobs
Upstream Metal Manufacturing	1,075
Agricultural Inputs and Services	714
Metal Mining	571
Downstream Metal Products	70
Forestry	23
Non-metal Mining	21
Non-metal Mining	17

Source: ABR 2021.

On the other hand, the clusters with the highest number of start-ups tend to have low concentration factors, indicating that they are not regionally concentrated, and therefore have low evidence of regional advantage. This suggests that the start-ups operate externally to existing industry clusters. Industries such as Financial Services and Business Services have much lower concentrations relative to Australia (ECF of less than 1). These industries are likely to be more concentrated in city centres rather than industrial areas. This is specifically relevant for Mandurah, as there are more start-ups there than in any other LGA (Figure 23). The data suggests that there is more available support for start-up infrastructure and opportunities in Mandurah compared to any other area.

Figure 23 - Number of Start-Ups by LGA



Source: ABR 2021, FAR lane 2021.

### Boddington

In the past 5 years, there has been a total of 21 new start-ups in Boddington (Table 12). The traded industry with the most start-ups is Agricultural Inputs and Services with a total of 9 start-ups indicating a regionally concentrated industry and advantage. It is, therefore, likely that the employment opportunities within this industry have increased since 2016.

Table 12 – Boddington start-ups by traded clusters (business that started between 2016-2021)

Industry	Jobs 2016	ECF	Start-Ups since 2016
Agricultural Inputs and Services	55	1.1061157	9
Construction Products and Services	11	0.399055	2
Business Services	27	0.3895888	2
Transportation and Logistics	3	0.0582839	2

Source: ABS 2016, ABR 2021, FAR lane 2021.

### Mandurah

Mandurah has had 678 start-ups in the past 5 years (see Table 18). However, the data illustrate that the concentration factor (ECF) is low which means that the industries in which the start-ups operate do not have a regional competitive advantage. Most start-ups are in

financial and business services, and electronic commerce. The high numbers of start-ups are likely resulting from Mandurah's town centre, and existing business support network and the connectivity to major road and rail infrastructure.

*Table 13 - Mandurah Start-ups by Traded Clusters (Business that started between 2016-2021)*

Industry	Jobs 2016	ECF	Start-Ups since 2016
Financial Services	302	0.4955937	146
Business Services	344	0.4949745	135
Distribution and Electronic Commerce	187	0.3878091	86
Transportation and Logistics	164	0.3177263	42
Hospitality and Tourism	387	0.796124	33
Construction Products and Services	214	0.7741685	32

Source: ABS 2016, ABR 2021, FAR lane 2021.

### **Murray**

Shire of Murray has had 141 start-ups in the past 5 years. Data suggests that Agricultural Inputs and Services is a regional concentrated cluster by the increase in the number of start-ups since 2016 and relatively high concentration factor of 2.16 (the national average indicating that the region does not have an advantage within these industries) (Table 14). This indicates that the region has a competitive advantage in this industry. The remaining industries with a relatively high number of start-ups have low employment concentrations (ECF) relative to the national average indicating that the region does not have an advantage within these industries.

*Table 14 - Murray start-ups by traded clusters*

Industry	Jobs 2016	ECF	Start-Ups since 2016
Agricultural Inputs and Services	268	2.1608189	34
Business Services	75	0.4338601	25
Financial Services	37	0.2441095	20
Construction Products and Services	67	0.9744523	11
Distribution and Electronic Commerce	79	0.6586695	10

Source: ABS 2016, ABR 2021, FAR lane 2021.

### **Serpentine-Jarrahdale**

In the past 5 years, Serpentine-Jarrahdale had a total of 329 start-ups, suggesting an increase in employment opportunities since 2016. Seeing that the LGA is expected to experience population growth, the trend must continue to maintain current ESC and ESS levels. Thus, important to ensure sufficient business support within the LGA. The two industries that have an employment concentration factor higher than 1 is Transport and Logistics, as well as Construction Products and Services, suggesting that these industries have a regional competitive advantage (Table 15).

Table 15 - Serpentine-Jarrahdale start-ups by traded clusters

Industry	Jobs 2016	ECF	Start-Ups since 2016
Transportation and Logistics	138	1.2921313	56
Business Services	84	0.5841468	43
Construction Products and Services	75	1.3112977	38
Financial Services	18	0.142761	36
Distribution and Electronic Commerce	93	0.9321325	34

Source: ABS 2016, ABR 2021, FAR lane 2021.

## Waroona

In Waroona there has been a total of 32 new start-ups in the past 5 years. Of the industries that have experienced additional numbers of start-ups, the only industry that has an ECF above 1 is Agricultural Inputs and Services, likely arising from the existing infrastructure around this industry and abundance of land and resources (Table 16).

Table 16 - Waroona start-ups by traded clusters

Industry	Jobs 2016	ECF	Start-Ups since 2016
Business Services	43	0.6120106	11
Agricultural Inputs and Services	105	2.0829312	10
Transportation and Logistics	27	0.5174151	3
Distribution and Electronic Commerce	9	0.1846227	2
Hospitality and Tourism	35	0.7122031	1

Source: ABS 2016, ABR 2021, FAR lane 2021.

## Start-Ups Relevant to Tourism

In recent years the region has seen an increase in visitors coming to experience the mountain bike trails alongside other activities. Table 17 illustrates the number of start-ups in each LGA in the past 5 years. These are all local industries that play a crucial role in the overall economic growth of the region. Based on the data (Table 17) Peel has had 41 new start-ups since 2016, in which 19 started up 2020 or later. If the trend continues there the region will enable more local employment opportunities for residents.

Table 17 - Local tourism-related start-ups (business that started between 2016-2021)

Industry	Boddington	Mandurah	Murray	Serpentine-Jarrahdale	Waroona	Total
Local Hospitality Establishments	2	145	26	24	2	199
Hospitality and Tourism	-	33	8	8	1	50
Local Food and Beverage Processing and Distribution	1	20	5	5	1	32
Local Retailing of Clothing and General Merchandise	-	16	2	10	1	29
<b>Total</b>	<b>3</b>	<b>214</b>	<b>41</b>	<b>47</b>	<b>5</b>	<b>310</b>

Source: ABR 2021.

## Start-ups relative to Health Care and Social Assistance

Health Care and Social Assistance is one of the biggest employing industry in the region. Table 18 illustrates the number of start-ups by LGA within the region from 2016-2021. Data suggests an increase in medical services in Mandurah, Murray and Serpentine-Jarrahdale. However, ABR data suggests no start-ups in Boddington or Waroona which should be

considered a concern (note that Boddington has gained 1 GP since 2016 but within an already established business).

Table 18 – Local health care start-ups (business that started between 2016-2021)

Industry	Boddington	Mandurah	Murray	Serpentine-Jarrahdale	Waroona	Total
<b>General Practice Medical Services</b>	-	32	4	12	-	48
<b>Other Allied Health Services</b>	-	27	2	10	-	39
<b>Specialist Medical Services</b>	-	6	1	-	-	7

Source: ABR 2021.

### Start-ups relative to Construction and Manufacturing

Construction and Manufacturing are similarly big employers within the region. Table 19 suggests that the Industry with the highest numbers of start-ups are concreting services. Serpentine-Jarrahdale is the LGA that has experienced the biggest growth across these industries.

Table 19 – Start-ups within construction and manufacturing (business that started between 2016-2021)

Industry	Boddington	Mandurah	Murray	Serpentine-Jarrahdale	Waroona	Total
<b>Architectural Aluminium Product Manufacturing</b>	-	3	-	1	-	4
<b>Concrete Product Manufacturing</b>	-	-	-	1	-	1
<b>Concreting Services</b>	1	17	5	9		32
<b>Machine Tool and Parts Manufacturing</b>	-	-	3	1	-	4
<b>Other Heavy and Civil Engineering Construction</b>	-	5	-	6	-	11
<b>Other Non-Metallic Mineral Product Manufacturing</b>	-	1	-	-	-	1
<b>Prefabricated Metal Building Manufacturing</b>	-	1	3	7	-	11
<b>Structural Steel Erection Services</b>	-	4	-	9	-	13
<b>Structural Steel Fabricating</b>	1	1	-	4	-	6

Source: ABR 2021.

### Benchmarks comparisons

Comparably, benchmark regions with higher ESS are the ones that have a regional competitive advantage. For example, Mornington Peninsula has an agricultural history with many existing food and wine producers who are recognised as industry leaders in the respective industry. Additionally, Greater Geelong is experiencing growth in knowledge-intensive industries including professional services, finance and insurance, advanced materials manufacturing, research as well as creative and cultural activities, highly due to their economic development strategies and existing business support. Moreover, the Sunshine Coast is seen as a distinct tourism destination with great access to universities and has diverse employment opportunities. These are all benchmarks in, which the Peel region can learn from and follow.

Table 20 – Benchmark comparison

Metric	Peel Region	Sunshine Coast	Mornington Peninsula	Greater Geelong	South-West Region	City of Wanneroo	Rockingham
<b>ESS</b>	75%	91%	-	83%	67%	58%	70.6%
<b>Biggest industries of employment</b>	Retail Trade, Health Care & Social Assistance, Construction	Health Care & Social Assistance, Construction, Retail Trade.	Construction, Health Care & Social Assistance, Retail Trade.	Health Care & Social Assistance, Retail Trade Construction	Health Care & Social Assistance, Retail Trade Construction	Construction, Retail Trade, Education & Training.	Construction, Health Care & Social Assistance, Retail trade.
<b>Biggest industries in terms of output</b>	Manufacturing, Mining, Construction	Agriculture, Forestry and Fishing, Mining, Manufacturing.	Construction, Manufacturing, and Rental, Hiring & Real Estate Services.	Agriculture, Forestry & Fishing, Mining, Manufacturing.	Manufacturing, Construction, Mining.	Agriculture, Forestry and Fishing, Mining, Manufacturing.	Public Administration & Safety, Construction, Manufacturing.

Source: Economic.id. 2021, REMPLAN 2021.

## Implications for Regional Aspirations and Industry Development Projects

### Thriving Industries

The key findings that relate to the region's thriving industries aspirations include:

- Peel region is currently importing skills into the region for occupations that require higher levels of educational attainment. In addition, skills are leaking out of the region due to a lack of linked job opportunities or industries.
- Employment is uniformly distributed in a small number of industries.
- Clusters of traded industries only exist within the resource and agricultural industries.
- There is more employment in local industries than in traded industries. The traded industries are associated with higher wages and higher productivity compared to local industries and is an important focus when increasing regional strengths and global competitiveness.
- The regional workforce is greater than the number of employment opportunities.
- There has been an increasing number of start-ups however in industries that do not significantly contribute to the local or global economy.

Current factors that can facilitate the thriving industry aspiration include, but are not limited to:

- Creation of new employment opportunities across a more diverse set of occupations.
- Support the identified clusters (Resource and Agricultural industries) by investing in infrastructure and supply chains required to transport products out of the region.
- Development and success of the planned projects that take advantage of the region's competitive advantages. The planned projects include Peel Business Park, NERA Hydrogen Cluster, and the WA Food Innovation Precinct.

### Agricultural and Food Innovation

Peel's agriculture and food production sectors are planned to be enhanced through continued innovation, investment and research which has the potential to result in a more diverse set of employment opportunities across job types. This also has the potential to enhance employment opportunities that require a higher level of education, which would then attract a new type of workforce as well as create jobs that match the skill of the workforce. In addition, this would enhance the region's knowhow by increasing the talent, skills, and knowledge of workers.

## Tourism Excellence

An aspiration is that by 2050, the Peel tourism economy has tripled. As there has been a creation of 310 new businesses relevant to the industry, the region could achieve this aspiration and contribute to additional regional output and employment opportunities benefitting Peel residents.

## A Strong and Resilient Community

To achieve the aspiration of a strong, vibrant and resilient community underpinned by best practice social services and infrastructure, the region is required to consider how to better protect itself from external shocks. For a community to be resilient, it is important to have diversity - both in occupations and industries. This contributes to better resilience to external shocks. For example, in Mandurah a lot of employment is focused on retail trade which has been largely affected by COVID-19 and has experienced an increase in unemployment rates. If some of these workers worked in other industries and occupations, less people would have been negatively affected.

Table 21 - Knowhow application gap analysis – Peel regional blueprint aspirations & industry development projects

Goal	Indicator / Goals	Current	Gap
<b>Thriving Industry</b>	By 2050, employment self-sufficiency targets will exceed the WA state average.	Peel ESS: 81% State ESS: 107%*	32%-points
	Provision of start-up and incubator support to encourage new agri-business opportunities in the region.	<b>Start-up and Innovation:</b> Mandurah focused, industry agnostic.	<b>Start-up and innovation:</b> Outreach innovation and start-up support/network to service other LGAs.  Tourism focused start-up and innovation support.
	Enhanced infrastructure to deliver agri-food industry-relevant training. Potential for joint venture TAFE, Industry and Government to develop on-site multi-functional centre within Peel Business Park.	<b>Agriculture and food:</b> South Metro TAFE: Horticulture and Food Preparation / Cooking, IT, Electrotechnology.	<b>Agriculture and food:</b> Provision of Tertiary level Food Science and Agricultural Science education and training.  Delivery of WA Agri-food Precinct
	By 2050, the Peel's workforce participation rates exceed the WA state average.	Peel: 58% State: 66%	8%-points
<b>Strong and Resilient Communities</b>	By 2050, Peel employment participation rates exceed WA state average.	Peel: 50% State: 58%	8%-points
	By 2050, participation of older active community members in the workforce is above the WA state average.	Peel: 34% State: 43%	11%-points

Source: ABS Census, 2016.

**Note:** Workforce participation rates are calculated based on employed people between the ages 15-64.

Employment participation rates are calculated based on employed people over 15.

Participation rates of older community members are calculated based on employed persons above the age of 50.

## SWOT ANALYSIS AND KEY KNOWHOW INSIGHTS

### SWOT Analysis

Analysis of the Peel region's economies, community and human capital pools highlight the following strengths, weaknesses, opportunities and threats.

#### Strengths

- Strong pipeline of investment in transformational projects (Transform Peel, Peel Business Park, WA Food Innovation Precinct, Transform Mandurah, Dwellingup Trails).
- Strong existing industry based on the wealth of natural resources creates a competitive advantage within the resource and agricultural industries.
- The increasing migration of residents (including culturally and linguistically diverse communities) to the Peel region, bringing new and varied knowhow that can enhance human capital pools.
- Diverse and high value natural, environmental, and cultural assets that attract visitors and potential residents to the Peel region.
- The community services sector is passionate and connected, willing to collaborate to achieve positive outcomes for the Peel region's communities.

#### Opportunities

- Opportunity to leverage current visitation trends (responding to COVID-19 travel restrictions) to build and consolidate the Peel region as a major WA visitor destination underpinned by innovative tourism enterprises and experiences. This has the potential to lead to the creation of additional jobs that align with skills available in the region's human capital pools.
- Peel's agriculture and food production sectors are planned to be enhanced through continued innovation, investment, and research. This will require proactive human capital development, which creates an opportunity to develop or attract new skills, talent and knowledge to the region, as well as establish new linkages to tertiary education institutions or improve existing education.
- There is an opportunity to investigate and leverage off the intersection of the region's strategic industries and the unique knowhow within them to produce globally unique innovations. For example, what unique knowledge is being held and developed within the mining industry that could contribute to innovation within the agriculture industry?

#### Weaknesses

- Complex socioeconomic, health and mental health challenges constrain education attainment, training and employment, particularly for isolated communities in the Peel region.
- The Peel region in general has limited spaces that are dedicated to start-ups and innovators, where they can make connections and networks and access advice in person. Currently, most innovation and start-up support are Mandurah centric.
- Housing availability and affordability is a major challenge placing pressure on residents in the region. A peak in construction following COVID-19 and the associated incentives to build has created a bottleneck in development that is putting extreme pressure on the current stock and creating a high priced and highly competitive rental market.
- Population growth, particularly amongst LGAs with large youth cohorts (i.e., Serpentine-Jarrahdale) presents a risk if they cannot provide better access to training and fulfilling

career pathways. A lack of local opportunities could lead to increased levels of disengagement.

- A relatively low proportion of 'professional' jobs in the region, or jobs that require higher tertiary education. This may be limiting the migration of professionals to the area, and the missed opportunity of higher incomes that can be spent in the local economies.
- Lack of education and training opportunities that are aligned with the region's aspirations for an increase in professional and technicians and trades workers.

### Threats

- COVID-19 continues to contribute to uncertainty and disruption, particularly within the retail and hospitality sector which has a significant impact on the City of Mandurah economy.
- Leakage of talent and knowhow out of the Peel regional economy if transformational projects and investments are not completed/do not progress, limiting quality employment and entrepreneurial opportunities.
- The increasing impacts of climate change on the food and agricultural sector (i.e., through increased instability in weather patterns, increased drought and flood) may adversely impact the natural resource base that the region will be reliant on for agricultural industry growth. This makes an innovation precinct (WA Food Innovation Precinct) even more critical, to proactively identify innovations that will build the region's resilience to climate-induced shocks.
- The expected increase in population growth, particularly in Serpentine-Jarrahdale with their limited and uniform industry base. The population growth requires additional services that can accommodate the future residents.

### Key knowhow insights

The analysis undertaken in this report has produced the following high-level key insights relating to focus areas for the enhancement of knowhow within the Peel region. Detailed analysis can be found in the conclusion of each chapter.

### Knowhow Capacity

To achieve the aspiration of a strong, vibrant, and resilient community that is empowered to contribute to the region's knowhow, the following should be considered as part of any strategic or action planning:

- Improve the current infrastructure and quality of health and community services.
- Education attainment and attendance for children and young people to enhance their chances of completing secondary school with the skills and capabilities to transition into higher tertiary education options.
- Connecting students and young people with opportunities to live and work within the region and creating clear pathways to those opportunities (for example jobs in tourism, food, agriculture, and population services).
- Removing barriers to school and training attendance through enhanced transport and connections within and between LGAs in the region.

### Knowhow Enablers

To create a capable workforce that can unlock the potential of the Peel region's economy, the following should be considered as part of any strategic or action planning:

- Completion and operationalisation of planned innovation and training infrastructure relating to strategic industries (tourism, food, and agriculture). This includes the Peel Hospitality Training Centre and the WA Food Innovation Precinct.
- Ensure the WA Food Innovation Precinct model extends beyond the Shire of Murray to enhance benefit and opportunities for employment and knowhow development across the region.
- Increased space and resources that supports the connection and collaboration of regional entrepreneurs and innovators to encourage the development of regionally unique knowhow (that have the potential to develop globally unique products, enhancing the region's competitive advantages). Where possible, these should aim to be industry-specific to maximise value and outcomes for the ecosystem.
- Stronger linkages between the focus of regional education providers and strategic industries, providing additional opportunities for higher education courses and research that will diversify the talent, skills, and knowledge within industries in the region. This will work to prevent young people from having to leave the region to pursue higher education opportunities and will enhance the career pathways available locally.
- Focus on soft skills, core competencies and capabilities development, through primary, secondary, VET and tertiary education providers to build a workforce that is multi-skilled and adaptable.

### **Knowhow Application**

To develop an environment where knowhow can be applied to the maximum benefit of the regional economy, the following should be considered as part of any strategic or action planning:



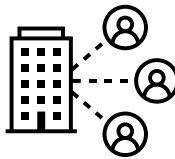
- Creation of new employment opportunities across a more diverse set of occupations.
- Development and success of the planned projects that take advantage of the region's competitive advantages. The planned projects include Peel Business Park, NERA Hydrogen Cluster, and the WA Food Innovation Precinct.
- Increased focus on developing traded industries and enterprises that attract a diversity of knowhow to the region both as workers and resident workers and encourages the development of regionally focussed (and delivered) education and training opportunities, as well as innovation and start-up support.
- Support the identified clusters (Resource and Agricultural industries) by investing in infrastructure and supply chains required to transport products out of the region.

## Scenarios

### *Using Scenarios to plan for knowhow development*

Through economic development scenarios, we can explore a range of potential futures which are relevant to Peel and identify actions that will prepare the region to meet its social and economic development objectives. In the context of this report, scenarios consider what human capital requirements and capacity will need to be developed to meet the economic and social needs of the Peel community. This report identified three plausible scenarios to test and map out future regional knowhow requirements by the year 2031 based on WA Tomorrow's population Forecast for the region. A high-level description of each scenario is provided in Table 22.

Table 22 – Plausible scenarios (high level summary)

S1: Business as Usual (BAU)	S2: Population driven focus	S3: Strategic industry focus
		
<p><b>The Peel region's development continues in line with current trends.</b></p> <p>Scenario <b>one</b> is based on the current industry and population profile being maintained to 2031 and acts as a base case, which is useful to have as a baseline against which to compare the impacts of other scenarios.</p>	<p><b>There is significant investment and prioritisation of population-driven services. From health and social assistance through to retail and hospitality.</b></p> <p>Scenario <b>two</b> describes a future where significant investment is made in providing the amenities and services needed to attract more working professionals to live in the region as well as address the complex needs of the Peel region's communities.</p>	<p><b>The Peel region's potential in tourism, food and agriculture was realised beyond current projects, trends and investment.</b></p> <p>Scenario <b>three</b> is based on a significant increase and growth of the region's tourism, food and agriculture industries, beyond the current regional aspirations. Unique knowhow is developed at the intersection of the region's food and agriculture sectors, creating growth in these traded industries.</p>

## Scenario One: Business as usual / base case

Scenario one (BAU) is based on the current industry and population profile being maintained. In this scenario, the employment distribution across industries is maintained based on the same ratios from currently available data. This scenario acts as a base case against which we can compare scenario two and three, to understand and describe gaps in workforce related indicators.

### Scenario Profile

#### General population

As outlined in Table 23, it is forecast that there will be approximately 79,000 additional people living in Peel by 2031 when compared to the 2016 Census. This will include an increase in the labour force of 48,000 people and an additional 13,000 people over the age of 65. There will continue to be more local jobs than local workers, and the workforce participation rate will remain below other benchmark economies<sup>32</sup> at 56% (see Table 4). Table 24 illustrates that the education providers' capacity needs to increase to keep the current level of educational attainment constant.

Table 23 – Scenario one summary

Key indicators	2016	S1 - 2031	Change since 2016
Total population driven jobs	8,491	13,516	+ 5,025
Total industry driven jobs	26,848	42,656	+ 15,808

Total local jobs	35,339	56,172	+ 20,833
Total local workers	26,873	42,715	+ 15,842

Child dependency (0-14)	<b>26,240</b>	43,635	+ 17,395
Labour force (15-64)	<b>82,440</b>	131,040	+ 48,600
Age dependency (65+)	<b>25,135</b>	37,865	+ 12,730
<b>Total Population</b>	<b>133,815</b>	<b>212,540</b>	<b>+ 78,725</b>
Labour force participation rate	55.6%	55.6%	-

Source: WA tomorrow 2016-2031, ABS Census 2016.

Table 24 - Educational attainment needed by labour force 2031, BAU

Educational Attainment	Peel 2016	S1 – 2031	Change since 2016
Advanced Diploma and Diploma Level	8,696	12,710	+ 4,014
Bachelor Degree Level	8,064	11,786	+ 3,722
Vocational Education	22,995	33,608	+ 10,613
Graduate Diploma and Graduate Certificate Level	1,209	1,767	+ 558
Postgraduate Degree Level	1,445	2,112	+ 667
Secondary Education	47,249	69,057	+ 21,808
<b>Total</b>	<b>89,658</b>	<b>131,040</b>	<b>+ 41,382</b>

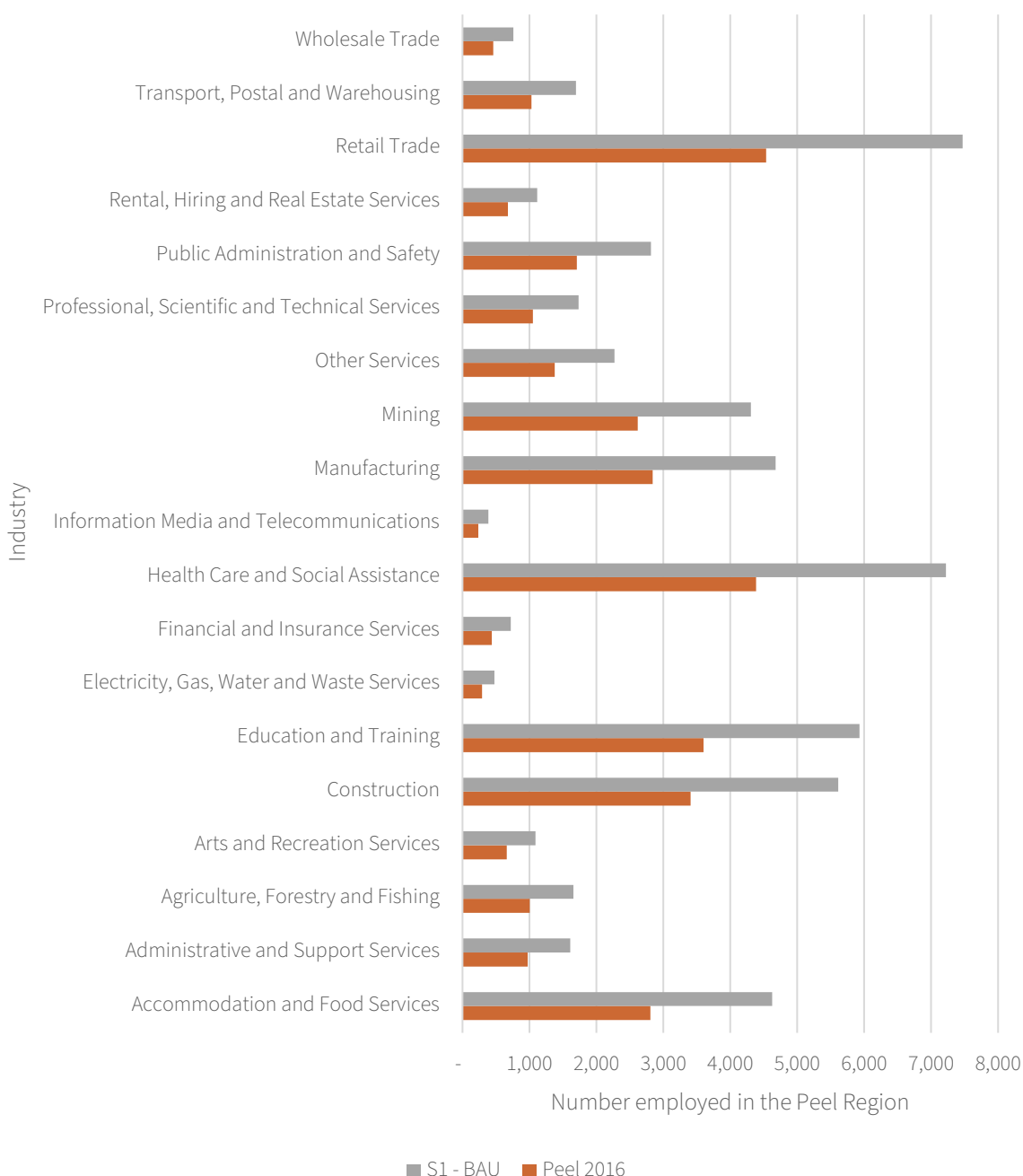
Source: WA tomorrow 2016-2031, ABS Census 2016.

<sup>32</sup> Benchmarks include: The Cities of Joondalup and Wanneroo (WA LGAs), Mornington Peninsula (VIC), Greater Geelong (VIC) and Sunshine Coast (QLD).

### Industry

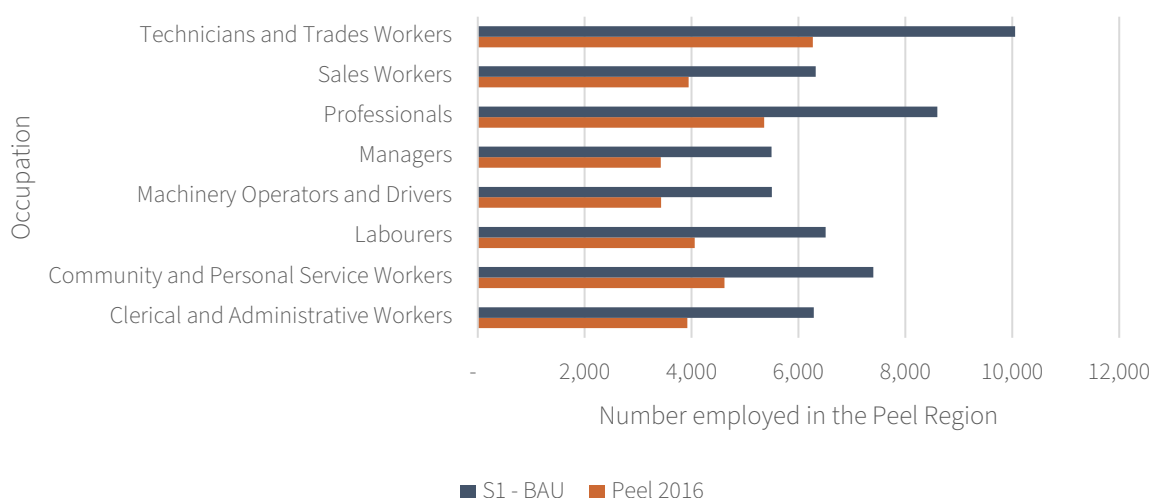
Figure 24 and Figure 25 describe Peel's potential economic profile in terms of industries of employment and occupations of workers. Ratios taken from 2016 are constant, resulting in Retail Trade, Health Care and Assistance, Education and Training remaining as the largest employers. The type of occupations that exist in Peel will also remain constant. To maintain the region's current ESS and ESC level more than 21,000 jobs will be needed. Similarly, the personal income of Peel's labour force will remain the same, as shown in Table 25.

Figure 24 - Industry of employment by local workers - scenario one



Source: WA tomorrow 2016-2031, ABS Census 2016.

Figure 25 - Occupations of local workers – scenario one



Source: WA tomorrow 2016-2031, ABS Census 2016.

Table 25 – Income Distribution – scenario one

Weekly income	Peel 2016	Peel S1 – 2031	Proportion
Low (\$1-\$799)	15,052	24,149	43%
Medium low (\$800-1,250)	6,999	11,229	20%
Medium high (\$1,500-1,999)	5,400	8,664	15%
High (\$2,000+)	7,295	11,704	21%
Nil income	266	427	1%
Total	35,011	56,172	100%

Source: WA tomorrow 2016-2031, ABS Census 2016.

## Scenario Implications

If the current population and industry ratios are maintained in line with forecast population projections, the following implications should be considered:

### Knowhow capacity

- The Peel region would have to create an additional 5,000 population-driven jobs to cater for the larger population and maintain same level of service capacity.
- The Peel region is likely to continue to struggle to meet the demand for population-driven services, particularly those relating to health and community services. This has the potential to exacerbate entrenched cycles of disadvantage which impact the capacity of communities to develop unique knowhow that can service strategic industries. This presents a risk for industry development.

### Knowhow enablers

- By 2031 the region must increase its provision of education infrastructure and capacity to enable 19,600 additional people to attain an education level that is higher than secondary school (high school).

### Knowhow application

- To maintain current levels of employment self-sufficiency and self-containment, the Peel region will have to create an additional 21,000 jobs of which 5,000 are filled by local workers.

## Scenario Two: Increased Focus On Population-Driven Services

In scenario two, Mandurah is developed further as a service centre for the Peel region. Scenario two focuses on a significant investment in population-driven services to address the complex needs of the Peel region's communities and to service a rapidly growing population who expect the same access to services and amenities that is available to those living in the Perth metropolitan area.

An increased investment in and provision of Retail, Child Care, Education, and Health Care and Community Services have the potential to:

- Enhance population access to high-quality and more appropriate education for residents;
- Increase population targeted and proactive support for vulnerable people in the region, leading to strong health, wellbeing, and education outcomes;
- An increase in the diversity of qualifications, skills and knowledge required to service the additional jobs required to enhance the services sector; and
- Provide the level of amenity required to support its growing population and by doing so attract skilled workers (and their families) to the region to work in and develop strategic industries.

This scenario assumes that by addressing the complex and foundational socioeconomic challenges in the community, regional knowhow will be developed, and the regional economy will develop around excellence in these services. There is a higher labour force participation rate and more of the local jobs are filled with Peel residents. This scenario identifies the gap of employment in population-driven industries by population with the base case scenario. To identify a standard or 'goal' level of service needed to service the population we identified appropriate benchmarks<sup>33</sup> and used the average ratio of employment within the service areas to population to understand any potential gaps in service provision.

### Scenario Profile

#### General population

As outlined in Table 26, scenario two assumes a higher workforce participation rate as well as employment self-containment and self-sufficiency, based on averages of comparable benchmarks economies. This helps us to understand the change or gap that the Peel region may need to address if it is to invest in growing and servicing its population-driven industries. More jobs are created due to the increased level of service needed for the population, which creates additional employment opportunities for residents (if they are empowered to access those jobs through education and training).

Since the employment self-containment is higher compared to scenario one, there will be a larger local workforce available to the regional economy. Additional investment in education infrastructure that is aligned to the developing services sector so that the workforce can develop the skills required to fill the additional jobs. The scenario two profile highlights the need for a more diverse and skilled workforce. Table 26 illustrates the gap between the qualifications needed to service the base case scenario (1) and the current scenario (2). The education attainment requirements for scenario two were developed by identifying what level of educational attainment is required within each industry. This was then applied to the employment targets.

<sup>33</sup> Benchmarks include: The Cities of Joondalup and Wanneroo (WA LGAs), Mornington Peninsula (VIC), Greater Geelong (VIC) and Sunshine Coast (QLD).

Table 26 – Scenario two summary

Key indicators	S1 - 2031	S2 – 2031	Gap
Total population driven jobs	13,516	20,443	+ 6,927
Total industry driven jobs	42,656	52,410	+ 9,754

Total local jobs	56,172	72,854	+ 16,682
Total local workers	42,715	56,866	+ 14,151

Workforce Participation rate	0.56	0.59 <sup>(1)</sup>	+ 0.03
ESS	0.81	0.94 <sup>(2)</sup>	+ 0.13
ESC	0.76	0.78 <sup>(3)</sup>	+ 0.02

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) (2) (3) Based on the average rate of benchmark economies including the cities of Wanneroo/Joondalup, Greater Geelong, Mornington Peninsula and Sunshine Coast (LGA level).

Table 27 - Educational attainment needed based on employment targets scenario two

Industry	S1 – 2031	S2 - 2031 <sup>(1)</sup>	S2 Gap (#)	Gap (%)
Advanced Diploma and Diploma Level	6,267	8,390	+ 2,122	25%
Bachelor Degree Level	11,313	16,755	+ 5,442	32%
Vocational Education	13,126	14,905	+ 1,779	12%
Graduate Diploma and Graduate Certificate Level	1,557	2,627	+ 1,070	41%
Postgraduate Degree Level	3,661	5,627	+ 1,966	35%
Secondary Education	20,248	24,550	+ 4,302	18%
Total	56,172	72,854	+ 16,682	23%

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) Target percentages for scenario two based on the average of comparable benchmark economies.

### Industry

A potential impact in the change in occupation profile in the region is a decrease in the percentage of the population living on a low income (from 43% to 35%) and an increase in those moving into the low-medium income bracket (from 20% to 32%). This presents opportunities and benefits for the regional economy if those incomes are retained and spent internally. Incomes are an important indicator and contributor to a region's SEIFA score, which for Peel, is lower than benchmark economies. The potential impact of scenario two's industry and employment profile on incomes is illustrated in Table 29.

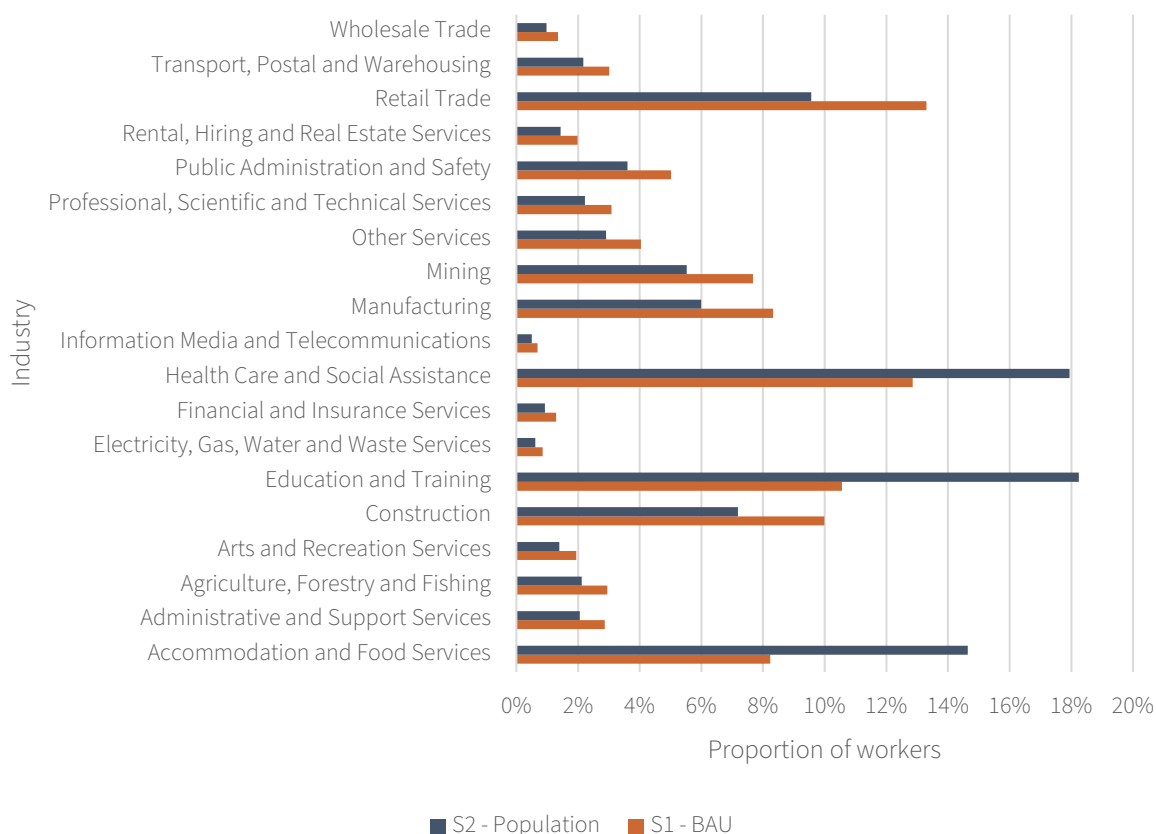
Figure 26 and Table 27 describe the potential industry and employment profile under scenario 2. The main industries of employment in this scenario are Health care and Social Assistance (18%), Education and Training (18%) and Accommodation and Food Services (15%).

The key types of occupations required by the population-driven economy will be Professionals, Community and Personal Service Workers and Clerical and Administration workers. Table 27 identifies the gap or change in these types of occupations required by the Peel region to service this industry profile, which is based on our comparable benchmark economies.

A potential impact in the change in occupation profile in the region is a decrease in the percentage of the population living on a low income (from 43% to 35%) and an increase in

those moving into the low-medium income bracket (from 20% to 32%). This presents opportunities and benefits for the regional economy if those incomes are retained and spent internally. Incomes are an important indicator and contributor to a region's SEIFA score, which for Peel, is lower than benchmark economies. The potential impact of scenario two's industry and employment profile on incomes is illustrated in Table 29.

Figure 26 - Industry of employment by local workers scenario two: Population driven



Source: WA tomorrow 2016-2031, ABS Census 2016.

Table 28 - Occupations needed by Peel's local workers to support scenario two profile

Occupation type	S1 – 2031	S2 – 2031 <sup>(1)</sup>	S2 Gap (#)
Clerical and Administrative Workers	11%	13%	+ 3,004
Community and Personal Service Workers	13%	14%	+ 2,652
Labourers	12%	10%	+ 1,011
Machinery Operators and Drivers	10%	5%	- 2,053
Managers	10%	11%	+ 2,678
Professionals	15%	20%	+ 5,787
Sales Workers	11%	12%	+ 2,772
Technicians and Trades Workers	18%	15%	+ 831

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) Target percentages for scenario two based on the average of comparable benchmark economies.

Table 29 - Income distribution of workers based on occupations in the Peel region – scenario two.

Weekly income	S1 – BAU	S1 %	S2 - Population <sup>(1)</sup>	S2 %
Low (\$1-\$799)	24,149	43%	25,618	35%

Medium low (\$800-1,250)	11,229	20%	23,673	32%
Medium high (\$1,500-1,999)	8,664	15%	10,579	15%
High (\$2,000+)	11,704	21%	12,566	17%
Nil income	427	1%	418	1%
Total	56,172	100%	72,854	100%

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) Target percentages for scenario two are based on average income by occupations standards in WA based on Census 2016 Data.

## Scenario Implications

If Peel region prioritises the development of population-driven services in the long term, the following implications should be considered:

### *Knowhow capacity*

- Significant investment in childcare and early learning services, primary and secondary schools as well as general support services for residents has the potential to lead to an increase in workforce participation. If coupled with an increase in the availability and accessibility of highly relevant (and industry aligned) education opportunities, the workforce is likely to be more competent and able to service the population services workforce and skills requirements.
- To realise the scenario two profile, the Peel region would need to create an additional 7,000 population-driven jobs to improve service levels. Population-driven jobs growth will predominantly occur in employment in Retail, Health and Social Services, as well as Educational Services.

### *Knowhow enablers*

- The change in employing industries profile will impact the qualifications needed by the local workforce drastically, creating pressure on local educational providers. Based on comparable benchmark economies, by 2031, 32% of the local workforce will be required to qualify for a Bachelors degree or higher. Currently, only 11% of the workforce meet these criteria.
- If a goal of the Peel region is to empower the local population to service these increased education requirements (and additional regional jobs), the investment will be required to provide accessible education and training that is directly relevant to the requirements of the population-driven industries. Alternatively, (or in addition), the increase in general population services and amenities is likely to assist in attracting the required knowledge and workers to both live and work in the region.

### *Knowhow application*

- For the region to achieve employment self-sufficiency and self-containment targets (benchmark ratios), the region will have to create an additional 17,000 jobs of which 14,000 would need to be filled by local workers.
- The need for more Professionals (+5,800), Clerical and Administration workers (+3,000) and Managers (+2,700) will increase demand for different qualifications compared to the workforce in scenario one. These occupation types are generally associated with larger incomes. If these occupations can be serviced by locals, or by attracting talent to live and work in the region, there is an opportunity to ensure the benefit of these incomes remains in the regional economy and contributes to positive cycles of service delivery and socioeconomic development over time.

## Scenario three: Strategic and traded industry focus

Scenario three is based on what is required to go beyond the current regional aspirations of strong tourism, food, and agriculture sectors, through significant targeted investment in

support for innovation and entrepreneurship and developing the region's competitive advantages through unique knowhow.

Stage two of the Peel Business Park is complete and fully occupied, with resident enterprises engaging and collaborating on innovative industry development projects, that harness the unique intersection of knowledge, skills and talent that are co-located on site. Tourism is continuing to grow across the Peel region, with visitors drawn to epic hiking and mountain bike trails, and high-quality food and beverage offerings serviced by the region's thriving local food producers who are raising the national profile of Peel's agricultural offer.

Scenario assumes that population services will indirectly benefit from this approach as new businesses and residents are attracted to the region, increasing ratepayer pools, and allowing for better service provision.

#### General population

In scenario three, the region's identified strategic growth industries (according to the Peel regional Blueprint: Tourism, Food and Agriculture) are heavily invested in and experience significant growth contributing to more jobs in the region. As described in Table 30, this profile results in higher employment self-sufficiency and self-containment levels which are levels based on aspirational benchmark economies with strong tourism, food and agriculture sectors. The participation rate of residents in this scenario is also higher compared to scenario one (BAU) (from 53% to 57%), however has a lower labour force participation rate compared to scenario two (scenario two) because the provision of the services for the population is still underway.

The scenario three profile requires an additional 14,600 workers of which 7,400 need a Bachelor degree or higher, and 7,200 need a VET/TAFE qualifications (Table 31) to service the occupations required.

Table 30 – Scenario three summary

Key indicators	S1 – 2031	S3 - 2031	Gap
Total local jobs	56,172	78,721	+ 22,549
Total local workers	42,715	61,822	+ 19,107
Workforce Participation rate	53%	57% <sup>(1)</sup>	+ 4%-points
ESS	0.81	1.05 <sup>(2)</sup>	+ 0.25
ESC	0.76	0.79 <sup>(3)</sup>	+ 0.02

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) (2) (3) Based on the average rate of benchmark economies including the Cities of Greater Geelong, Mornington Peninsula and Sunshine Coast (LGA).

Table 31 - Educational attainment needed based on employment targets – scenario three

Educational attainment	S1 - 2031	S3 - 2031 <sup>(1)</sup>	Gap (#)	Gap (%)
Advanced Diploma and Diploma Level	6,267	9,086	+ 2,819	31%
Bachelor Degree Level	11,313	16,952	+ 5,639	33%
Vocational Education	13,126	16,800	+ 3,674	22%
Graduate Diploma and Graduate Certificate Level	1,557	2,272	+ 715	31%
Postgraduate Degree Level	3,661	5,446	+ 1,785	33%
Secondary Education	20,248	28,164	+ 7,916	28%
Total	56,172	78,721	+ 22,549	29%

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) Target percentages for scenario two based on the average of comparable benchmark economies.

### Industry

Figure 27 and Table 32 describe the industry and employment profile under scenario three. Under this scenario, there has been significant investment in:

- Agriculture & food innovation contributing to increased employment in Agriculture, Forestry and Fishing industries (from 3% of total employment to 5%);
- Tourism, contributing to increased employment in Accommodation and Food Services by 12.5% (from 8% to 9% of total employment);
- Achieving a thriving industry, contributing to higher employment within Professional, Scientific and Technical Services (an increase from 3% to 6% of total employment); and
- Due to the increased jobs, there has been an increase in employment in Health Care and Social assistance (from 13% to 16% of total employment) which is based on benchmark economies.

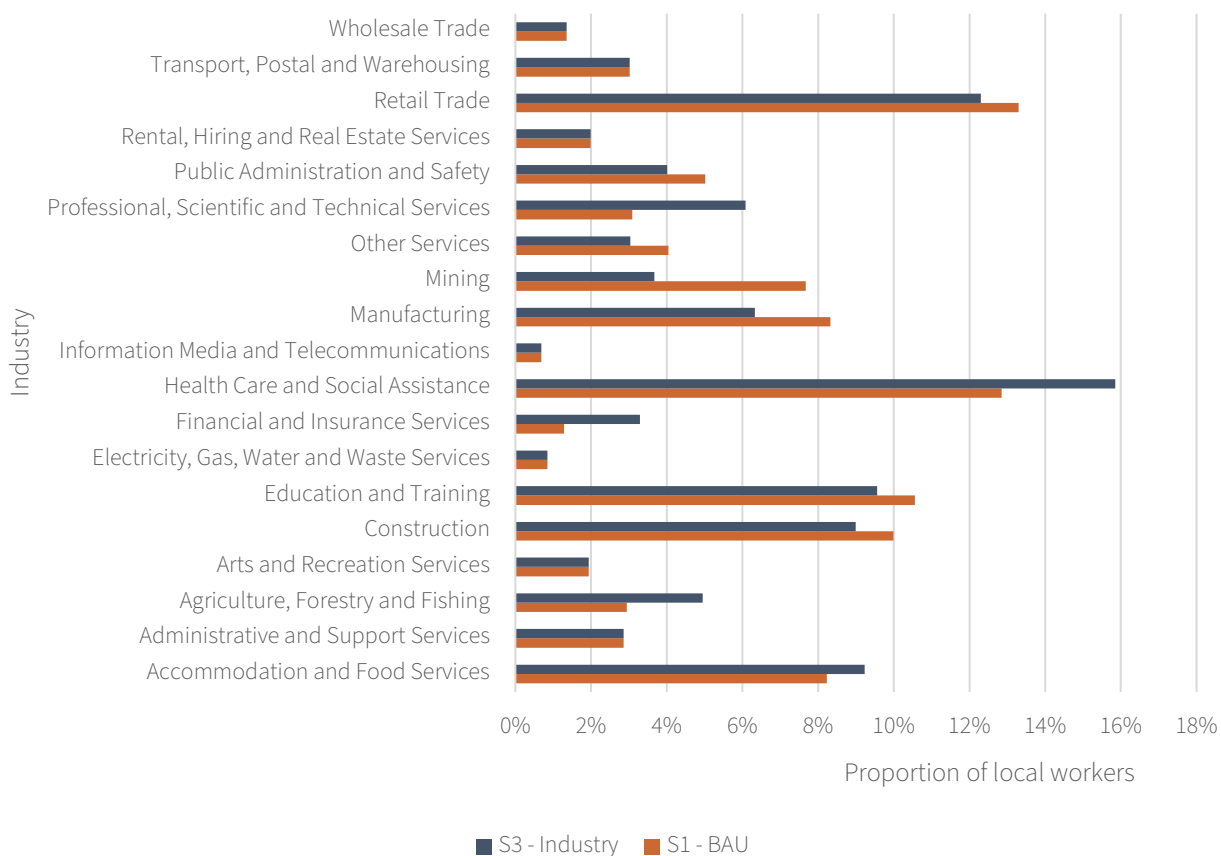
This vision illustrates a more diversified economy with various employment opportunities across multiple industries. The key types of occupations required by the industry-driven economy will be Professionals (22% of total occupations), Managers (14%), and Technicians and Trades Workers (13%).

To achieve the human capital requirements of this scenario certain occupations are needed, which are identified in Table 32. The biggest change in the occupations needed compared to scenario one will be:

- Professionals (+8,800);
- Managers (+5,400); and
- Clerical and administration workers (+3,400).

These are occupations which typically require higher tertiary education qualifications (see Table 33). Additionally, the data suggests that the Peel region won't need as many Machinery Operators and Drivers, and a lower proportion of Technicians and Trades workers, as well as Labourers when compared to scenario one. In terms of local incomes, the industry and occupation profile of scenario three sees a decrease in the percentage of the Peel population in the low-income bracket (from 43% to 35%), and an increase in the percentage of the population in the medium-low-income bracket (from 20% to 30%).

Figure 27 - Industry of employment by local workers S3: Industry Driven



Source: WA tomorrow 2016-2031, ABS Census 2016.

Table 32 – Type of occupation needed by local workers to support target

Occupation type	S1 - BAU	S3 - Industry <sup>(1)</sup>	Gap (#)	Gap (%)
Clerical and Administrative Workers	11%	12%	+ 3,447	35%
Community and Personal Service Workers	13%	12%	+ 1,924	21%
Labourers	12%	10%	+ 1,374	17%
Machinery Operators and Drivers	10%	6%	- 915	-20%
Managers	10%	14%	+ 5,401	50%
Professionals	15%	22%	+ 8,766	50%
Sales Workers	11%	10%	+ 1,877	23%
Technicians and Trades Workers	18%	13%	+ 568	5%

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) Target percentages for scenario two based on employment targets for this scenario.

Table 33 - Income distribution of workers based on workers occupations in the Peel region S3.

Weekly income	S1 - BAU	S1 (%)	S3 - Industry <sup>(1)</sup>	S3 (%)
Low (\$1-\$799)	24,149	43%	27,320	35%
Medium low (\$800-1,250)	11,229	20%	25,647	32%
Medium high (\$1,500-1,999)	8,664	15%	11,551	15%
High (\$2,000+)	11,704	21%	13,753	17%
Nil income	427	1%	450	1%
Total	56,172	100%	78,721	100%

Source: WA tomorrow 2016-2031, ABS Census 2016.

(1) Based on average income by occupations standards in WA based on Census 2016 Data.

## Implications

### Knowhow capacity

- Under this scenario, the Peel region would need to create an additional 22,500 jobs to cater for the larger population and to realise the benchmark ESC and ESS targets.
- By focusing on developing the traded economy as opposed to the population-driven economy, there is potential that the population-driven industries will lag until the industries of investment are working at full potential, and the benefit of those industries can be invested into population services.
- Under this scenario is the potential to develop a mismatch between the workforce needed and the local workforce's skills and qualifications if the region cannot enable its residents to obtain the relevant qualifications needed for job requirements.
- Currently, the Peel region's workforce has a relatively uniform distribution of qualification and skills and often seek similar jobs. Due to lack of industry aligned skills, the region is currently required to attract qualified workers from outside of the region. If this is not proactively addressed, moving forward, the region may not be able to facilitate the education needed nor attract workers to move to the region to address the gap of qualification between residents and the required workforce.

### Knowhow enablers

- Based on comparable benchmark economies, by 2031, 28% of the local workforce will be required to have a Bachelors degree or higher to match the scenario three profile. Currently, only 11% of the workforce meet these criteria.
- If a goal of the Peel region is to empower the local population to service these increased education requirements (and additional regional jobs) investment will be required to provide accessible education and training that is directly relevant to the requirements of the focus traded industries. In scenario two, investment in population-driven services is likely to supply increased amenities to attract workers to live in Peel. In scenario three the region may be more reliant on upskilling the local workforce. If this cannot be achieved, there may be a trend where these additional jobs are serviced by people who don't live (or spend their incomes) in the Peel region.

### Knowhow application

- The need for more Professionals (+8,800), Managers (+5,400) and Clerical and Administration workers (+3,400) will lead to a more diverse range of qualifications needed by the local workforce to service the growth industries. These occupations are associated with higher individual incomes. If these occupations can be filled by locals, or by attracting talent to live and work in the region, there is an opportunity to ensure that the benefit of higher incomes and spending remains in the local economy.

## General scenario implications for roadmap development

The examination of a range of potential economic development scenarios for the Peel region (up to 2030) produces the following for consideration in the development of skills, talent, and knowledge in the region, and the development of a human capital roadmap:

- If the Peel region is already struggling to provide adequate population services, there is a potential that ongoing cycles of disadvantage will be perpetuated and even deepen over time if these services are not enhanced.
- A focus on enhancing population-driven services, and servicing these industries with a skilled local workforce (rather than people travelling from outside the region each day) has the potential to:
  - Provide a more diverse range of fulfilling job opportunities for residents; and
  - Attract skilled people (and their families) to live and work in the region.

These outcomes would ensure that the incomes relating to those jobs have an increased chance of being spent in the regional economy.

To enable this outcome, the local workforce will require access to the right education and training opportunities. If access to this training is only available outside of the Peel region, there is a risk that this potential workforce will leave the region to undertake studies and remain outside the region to pursue job opportunities.

- A focus on developing the traded economy and a 'business as usual' approach to population-driven services (scenario three) has the potential to create a lag between industry development and human capital development. This means that strategic industries may continue to be serviced from outside the region, while local communities are not empowered through proactive investment in local services to participate in this growth (through jobs).

Over time, and if there is a focus on attracting talent that both work and live in the region (to service the traded industries), then these incomes may naturally drive up the expectation, quality, and provision of population services increasing the SEIFA (IRSD) scores and quality of life of residents. However, there remains a risk that those individuals and communities that are already experiencing disadvantage may be left behind.

- Under scenarios two and three, we see a positive shift in the percentage of people living on a low wage start to move into the low – medium wage income bracket. While still in the lower ranges of potential incomes, this positive movement may mean that more families and individuals are not dealing with chronic financial stress, which can have implications for physical and mental health, as well as socio-economic outcomes.

## Glossary of terms

Table 34 - Glossary of Terms

Term	Definition
<b>Direct employment</b>	Refers to the employment impacts that result directly from a particular industry or business.
<b>Economic complexity</b>	<p><b>Economic complexity</b></p> <p>“A measure of the knowledge in a society as expressed in the products it makes. The economic complexity of a place is calculated based on the diversity of products a place produces and their ubiquity, or the number of places able to produce them (and those places’ complexity). Places that can sustain a diverse range of productive know-how, including sophisticated, unique know-how, can produce a wide diversity of goods, including complex products that few other places can make”<sup>34</sup></p> <p>“The theory of economic complexity, introduced by Hausmann, Hidalgo et al. (2011), is based on the realization that the development of products and services not only requires raw materials, labour and machinery, but also tacit knowledge (or “knowhow”) of how to put inputs together to produce things and run business operations. This tacit knowledge tends to be the limiting factor for diversifying economic activities because it is the most difficult component of production to transfer. Whereas many other inputs to production – including materials, tools, and blueprints – are relatively easy to trade and transfer, tacit knowledge of how to combine inputs efficiently and effectively can only be acquired through experience. Moreover, modern production requires far more know-how than any single individual can acquire. Therefore, tacit knowledge is necessarily spread across many individuals who coordinate across teams and organizations.”<sup>35</sup></p>
<b>Economic growth</b>	Refers to the increase in the amount and value of goods and services produced.
<b>Economic impact</b>	Refers to the impact or change resulting from specific activities, that include but are not limited to economic, business, industry and environmental activities.
<b>Economic output</b>	Is the total value of goods and services produced within a particular geographic area.
<b>Employed residents</b>	Refers to the employment of residents who live within the Peel region or referenced Local Government Area.
<b>FTE</b>	Full-time equivalent. Refers to the hours worked by an employee on a full-time equivalent.
<b>Goals</b>	Broad aspirations that need to be achieved in order to meet The Shire’s Vision.
<b>Indirect employment</b>	Refers to the employment impacts as a result of a particular industry or business that results in employment changes in other related industries.
<b>Labour force</b>	Those who are of working age (15-65) and are employed or actively seeking employment.
<b>Local employment (jobs)</b>	Refers to employment within a Local Government Area regardless of where to employee resides.
<b>Peel region</b>	The Peel region encompasses the five local government areas of the Shire of Murray, City of Mandurah, Shire of Boddington, Shire of Waroona.
<b>Local Government Area (LGA)</b>	The municipal boundaries of the economy that services, and benefits from economic activities in the surrounds.
<b>Social amenities</b>	Refers to places, infrastructure and services that support the wellbeing of a particular community.
<b>Value-added</b>	A quantitative measure of how productive or efficient and industry is at increasing the value of its inputs.

<sup>34</sup> Growth Lab, Centre for International Development, Harvard University, “Western Australia Research Findings and Recommendations”, July 2020

<sup>35</sup> Growth Lab, Centre for International Development, Harvard University, “Western Australia Research Findings and Recommendations”, July 2020

## Technical Appendix

### Shannon's Index of Diversity

The Shannon Index is one of many diversity indices that can be used to measure diversity in categorical data. Although it was originally used to measure biodiversity, the same methodology can be applied to determine employment diversity.

The formula for calculating Shannon's Index is outlined below.

$$H' = - \sum p_i \ln(p_i)$$

Where:

H' = the Shannon Diversity Index Score

p = the relative quantity of employment in each category

Adjusting Shannon's Index for evenness, it is possible to derive the Shannon's Equability Index which is a diversity score between zero and one. A perfectly homogeneous score, (i.e., employment only exists within one industry) would have an equitability index of zero, a perfectly heterogeneous activity centre would have an equitability index of one.

Table 35 - Shannon's Index Industry of Employment

Industries	Boddington	Mandurah	Murray	Serpentine - Jarrahdale	Waroona	Peel	Sunshine coast	Geelong
Accommodation & Food Services	- 0.09	- 0.23	- 0.17	- 0.16	- 0.11	-0.20	-0.23	-0.20
Administrative & Support Services	- 0.09	- 0.12	- 0.10	- 0.11	- 0.07	-0.11	-0.12	-0.09
Agriculture, Forestry & Fishing	- 0.10	- 0.02	- 0.16	- 0.24	- 0.15	-0.10	-0.08	-0.05
Arts & Recreation Services	- 0.16	- 0.07	- 0.09	- 0.12	- 0.03	-0.07	-0.08	-0.07
Construction	- 0.08	- 0.25	- 0.22	- 0.32	- 0.26	-0.25	-0.23	-0.20
Education & Training	- 0.08	- 0.25	- 0.20	- 0.27	- 0.12	-0.23	-0.23	-0.25
Electricity, Gas, Water & Waste Services	- 0.02	- 0.04	- 0.07	- 0.03	- 0.04	-0.04	-0.04	-0.06
Financial & Insurance Services	- 0.07	- 0.31	- 0.17	- 0.17	- 0.15	-0.05	-0.11	-0.10
Health Care & Social Assistance	- 0.04	- 0.01	- 0.02	- 0.02	- 0.02	-0.26	-0.30	-0.31
Information Media & Telecommunications	- 0.08	- 0.10	- 0.35	- 0.15	- 0.36	-0.20	-0.16	-0.21
Manufacturing	- 0.26	- 0.02	- 0.25	- 0.08	- 0.33	-0.20	-0.01	-0.01
Mining	- 0.13	- 0.14	- 0.12	- 0.10	- 0.10	-0.13	-0.14	-0.13
Other Services	- 0.04	- 0.12	- 0.09	- 0.11	- 0.08	-0.11	-0.17	-0.16
Professional, Scientific & Technical Services	- 0.06	- 0.16	- 0.10	- 0.19	- 0.11	-0.15	-0.13	-0.16
Public Administration & Safety	- 0.03	- 0.09	- 0.06	- 0.06	- 0.05	-0.08	-0.09	-0.06
Rental, Hiring & Real Estate Services	- 0.03	- 0.09	- 0.06	- 0.06	- 0.05	-0.08	-0.09	-0.06

Retail Trade	-0.09	-0.30	-0.21	-0.17	-0.14	-0.26	-0.26	-0.28
Transport, Postal & Warehousing	-0.03	-0.11	-0.06	-0.16	-0.10	-0.11	-0.11	-0.12
Wholesale Trade	0.07	0.05	0.06	0.08	0.02	-0.06	-0.08	-0.08
<b>Total</b>	<b>1.40</b>	<b>2.48</b>	<b>2.51</b>	<b>2.57</b>	<b>2.22</b>	<b>2.61</b>	<b>2.62</b>	<b>2.57</b>

Source: REMPLAN 2020, Economic.id 2021, FAR lane 2021.

## Cluster Analysis

### Boddington

Figure 28 indicates the concentrated clusters in Boddington are centred around Metal Mining with an ECF of 81 and total local employment of 1,370. Metal Mining is a traded industry, meaning that it is concentrated in the region but sells products or services across multiple regions and countries. Trading industries are associated with higher average wages and higher productivity compared to local industries and is an important focus when increasing regional strengths. The Figure suggests that Boddington has a specialised advantage that may create further employment opportunities within the Peel region by contributing to economic growth and development, by attracting more firms who need more local services.

Figure 28 - Cluster by ECF Boddington

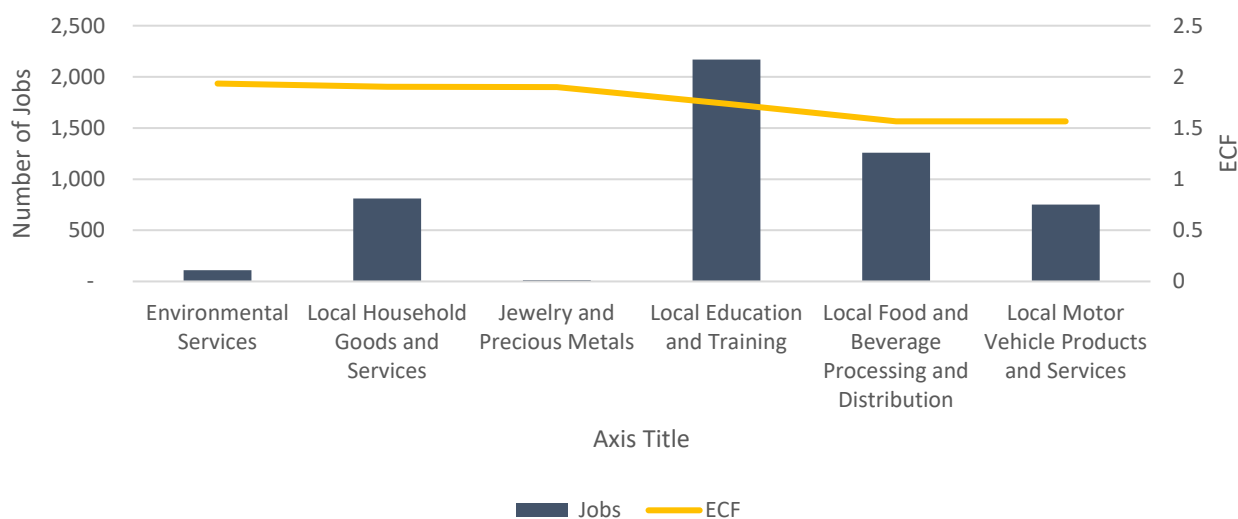


Source: ABS Census 2016, FAR lane 2021.

### Mandurah

Figure 29 indicates that Mandurah has a relatively low ECF typical for these cluster types. This suggests that these clusters are not present and that employment in these industries is less geographically concentrated relative to Australia and does not require significant infrastructure. The identified clusters are all local industries as they serve the local market and play a supporting role in the overall economic growth of the region.

Figure 29 - Cluster by ECF Mandurah

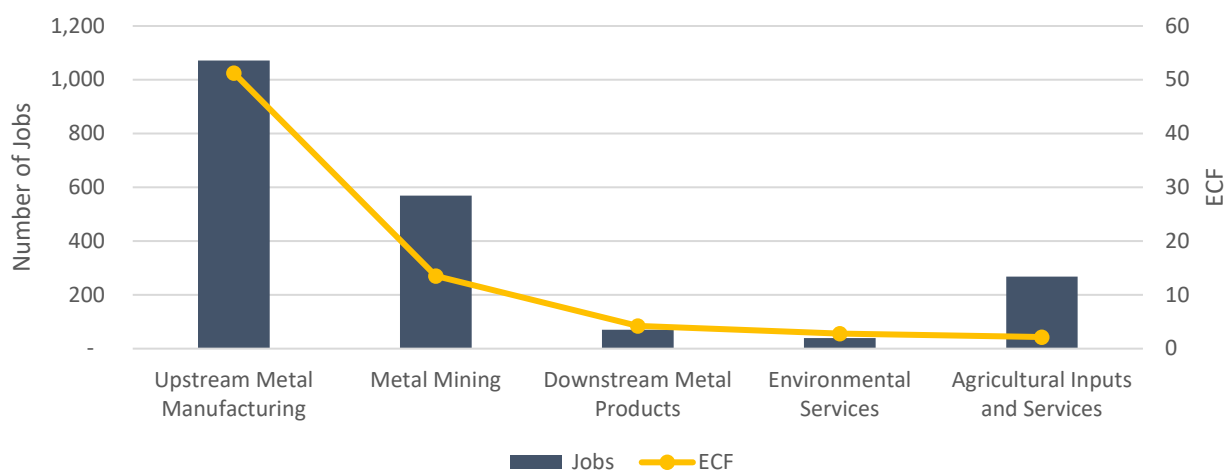


Source: ABS Census 2016, FAR lane 2021.

### Murray

Analysis of the most regionally concentrated clusters suggests that the Upstream Metal Manufacturing cluster is highly concentrated indicating a geographic specialisation within Murray (Figure 30). Metal Mining also has a high ECF of 13.5 indicating another specialisation within the region. These industries are both traded suggesting an opportunity to attract additional businesses and employment within these industries. A further consideration is required in terms of how to specialise the skills of the local population within these industries.

Figure 30 - Cluster by ECF Murray

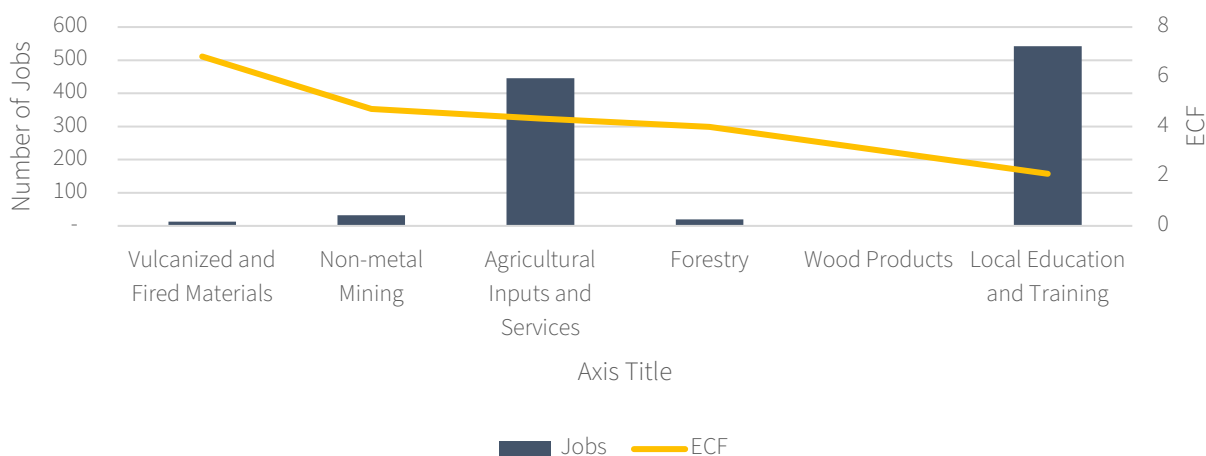


Source: ABS Census 2016, FAR lane 2021.

### Serpentine-Jarrahdale

Analysis of the regionalised concentrated clusters suggests that the most centred cluster in Serpentine-Jarrahdale is in Vulcanized and Fired Materials with an ECF of 6.8 (Figure 31). Other identified clusters are other resource-related industries resulting from the access to industrial land and natural resources. The existing industry clusters with the largest number of jobs have a relatively low employment concentrating factor, providing no evidence that these clusters are present within the region.

Figure 31 - Cluster by ECF Serpentine-Jarrahdale

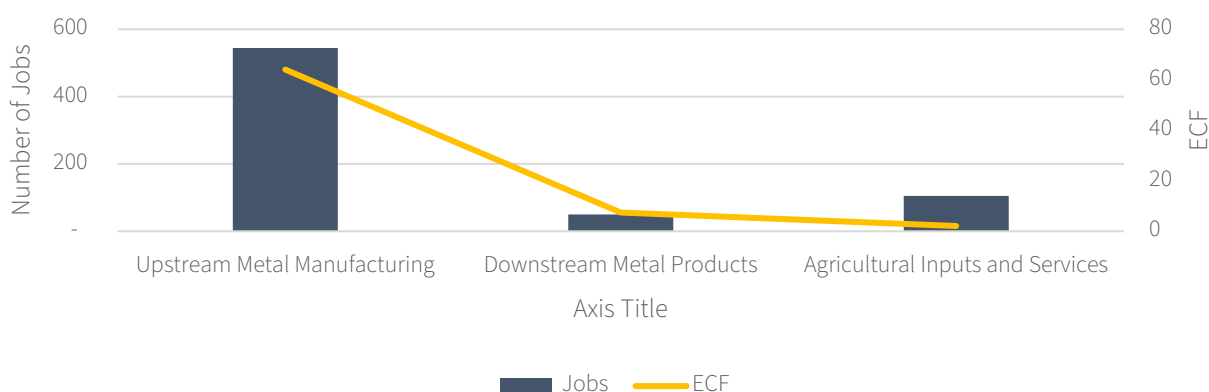


Source: ABS Census 2016, FAR lane 2021.

### Waroona

Analysis of the regionalised concentrated clusters suggests that the most centred cluster in Waroona is Metal Manufacturing, Metal Mining and Downstream Metal Products (Figure 32). These are all traded clusters that are highly specialised and can contribute to regional economic growth by attracting new businesses to the area to take advantage of the available infrastructure. However, it is important to note it is unlikely that there would be an increase in mining activities within the region due to state forests and other regulations.

Figure 32 - Cluster by ECF Waroona



Source: ABS Census 2016, FAR lane 2021.

**For more information about the People of Peel Human Capital Roadmap, please contact the Peel Development Commission on 08 9535 4140.**

